SPORTS INJURIES

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Prevention and Active Treatment

CHRISTOPHER
WOODARD

Max Parrish London

PREFACE

There have been textbooks published on the treatment of sports injuries, but none, so far as I am aware, that concentrates on the active treatment that is now winning more and more predominance over the more passive forms of treatment such as strapping, massage, electricity and heat. It is hoped that this book will be a help to club trainers, coaches, masseurs and physiotherapists in minimizing the time lost from sport by their patients through injury It is not meant to be a textbook for doctors, and throughout its pages I have been careful to make this clear, I have also been at pains to signpost the type of case which should be given expert medical attention, and not treated by unqualified hands

I particularly wish to acknowledge the tremendous help I have had from Edward Bolton of the Edward Bolton Gymnasium in Paddington London He is entirely responsible for advising me about the strength-training exercises and in fact I owe any knowledge I have acquired in this particular branch of the subject entirely to the very pleasant hours I have spent in his Gymnasium. Furthermore, I wish to thank him for the facilities put at my disposal in his photographic studio, where all my pictures were taken.

I would also like to acknowledge the patience and help of Mrs Witts and Miss Dudley, and the continuous courtesy shown to me at all times by my Publishers My grateful thanks are due to Mr Don Shaul for his patience and skill in drawing the illustrations in the text.

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Finally I have to thank Mr R. L. Hudson of Worthing for the set of pictures showing how a cyclist uses his back muscles with the different levels of handlebar (Fig 10)

Too often in the past – and still today – prevention and treatment of injury in sport has been a haphazard business If this book helps trainers and coaches to understand the basic principles of their craft and to get their casualties back on the track or field more speedily than before, it will have achieved its object.

C R. W

November 1953

ILLUSTRATIONS IN HALF-TONE

Between pages 64 and 65

1

What is Active Treatment?

At a recent medical conference, a well-known surgeon was asked whether there was any sound, specialized treatment for sports injuries He replied that, strangely enough, medical science was unable to offer such specialized knowledge, and could really tell an injured athlete little more about himself than the average masseur or osteopath He went on to say that in 1948, when McDonald Bailey, the international sprinter, had torn a muscle, no doctor had been able to tell him what to do about it to assure his recovery and the various ones he saw all recommended a different treatment. This is not quite true, in fact McDonald Bailey went on four years later to beat world records and run better than he had ever done before, but it would not be out of place to show why the surgeon made these remarks

In the past, the treatment of sports injuries has been completely haphazard, for which the medical profession is as much to blame as anybody Numbers of surgeons and physicians, both general and specialist, had no hesitation in recommending treatment of a sports injury, although it was entirely outside their particular sphere They seemed unaware that there were, in the profession, specialists with considerable experience in the treatment of such injuries, by their action they perpetuated the feeling amongst laymen that it does not matter who treats them for such things, and that the opinion of masseurs and osteopaths is as good as any other opinion.

ILLUSTRATIONS IN LINE

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Everyone knows that if you dislocate your knee, or tear a cartilage in it, the surgeon will probably take you into hospital and operate, equally, if a footballer falls heavily and twists his back, a slipped disc may be diagnosed and he may well be put into a plaster jacket for several months, or even have a major operation. But in ninety-nine cases out of a hundred, active treatment would not only ensure far better end results, but would mean that the patient could continue his active sporting career

Sports injuries fall into clearly defined categories for different sports Football has its torn muscles of the thigh and back, torn cartilages of the knee, sprained ankles and bruises Cricket has its fibrositis of the back and the characteristic groin injury of bowlers, who may also suffer from shoulder sprain. The great Larwood developed bruising of the ball of his foot, because of the speed of his run-up Leg-spin bowlers often pull the small tendons in their hands and this is proving a problem at present with the young Robins Peebles had to change his style of bowling because of it. Another injury characteristic of cricket is the blistered finger of the off-spin bowler one recalls the injury to Ames Not that anything more than what was done could have been done in his case, but it must be stressed that there is usually an active treatment for such injuries A further example is the treatment of cut eyes and bruised knuckles in boxing The number of such injuries in sport is almost limitless and includes the problem of weight reducing to the jockey temperature regulation to the swimmer sugar intake to the player of fast ball-games such as squash or tennis The taking of stimulants in the interval is another matter associated with injury

The treatment of sports injuries is dealt with systematically in Chapters 7 to 14, starting with the head and neck

It is the aim of this book to point out that there is a specific and correct treatment of all athletics injuries It is intended as a guide to the various treatments that can be carried out by trainers or coaches at the place of injury and, what is perhaps more important, it points out the types of injuries that should only be treated in hospital, where there are facilities for proper observation and investigation, such as X-ray and orthopaedic treatment.

In most soft-tissue injuries the first aim should be to prevent the formation of adhesions, and this can only be done by putting the limbs through a full range of stretching movement. It might be supposed that this requires specialized knowledge, but the fact that anyone who sets himself up as an osteopath can have great success by doing just that, shows that perhaps it is not as difficult as it may at first appear In this book the straightforward manipulations are described and no harm can be done by coaches learning how to do them The one important thing to remember is that such manipulations should never be done if there is the remotest risk of the athlete having sustained any bone injury, or, in fact, anything more than a strain or torn muscle. If there is the slightest doubt, it is wisest to refer the case immediately to a doctor for X-ray or other hospital treatment. To learn the technique of manipulation, however should prove of inestimable benefit to both trainers and coaches and enable them to treat such cases much as they do already but with a far sounder knowledge of what they are doing

In these days of high transfer fees in soccer and other forms of commercialization of sport, greater importance must be attached to the treatment of injuries, for it is obvious that within a week of a club paying an enormous fee, a player may be injured in such a way as to keep him out of the sport for the rest of his days In the medical profession, there are divided opinions as to the best way of treating the common injuries sustained in various sports

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Everyone knows that if you dislocate your knee, or tear a cartilage in it, the surgeon will probably take you into hospital and operate; equally, if a footballer falls heavily and twists his back, a 'slipped disc' may be diagnosed and he may well be put into a plaster jacket for several months, or even have a major operation. But in nineteen cases out of a hundred, active treatment would not only ensure far better end results, but would mean that the patient could continue his active sporting career.

Sports injuries fall into clearly defined categories for different sports. Football has its torn muscles of the thigh and back, torn cartilages of the knee, sprained ankles and bruises. Cricket has its fibrositis of the back and the characteristic groin injury of bowlers, who may also suffer from shoulder sprain. The great Larwood developed bruising of the ball of his foot, because of the speed of his run-up. Leg-spin bowlers often pull the small tendons in their hands and this is proving a problem at present with the young Robins. Peebles had to change his style of bowling because of it. Another injury characteristic of cricket is the blistered finger of the off-spin bowler; one recalls the injury to Ames. Not that anything more than what was done could have been done *in his case*, but it must be stressed that there is usually an 'active' treatment for such injuries. A further example is the treatment of cut eyes and bruised knuckles in boxing. The number of such injuries in sport is almost limitless, and includes the problem of weight reducing to the jockey, temperature regulation to the swimmer, sugar intake to the player of fast ball-games such as squash or tennis. The taking of stimulants in the interval is another matter associated with injury.

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One of our best-known international sprinters was running in a 200-metre race when he suddenly fell with a severe tear in his right hamstrings Although he was in great pain, we immediately made him trot round until he could do so without limping It took about an hour, but then he really had recovered his balance Next day we allowed him to run at three-quarters speed, and three days later he had recovered his full speed Eight days later he ran in an international championship, and did his best time ever He had such a severe tear in his muscles, however, that three weeks later the back of his leg from thigh to heel was still black with bruising This gradually worked itself out – but because the damaged muscle fibres had been effectively separated from the healthy ones the effect on his running was minimal.

It should be remembered that the torn muscle fibres never grow again, but merely form fibrous tissue, and it is essential to separate this fibrous tissue from surrounding healthy muscle, and prevent it clinging If you rest the limb the fibrous tissue grows into all the surrounding healthy muscle, and then the process of separating it may be well-nigh impossible If the movement is started straight away then the fibrous tissue forms limited strands which are entirely separate from the healthy muscle fibres because the limb has been fully stretched before their formation, the patient does not suffer from twinges of pain as these fibrous strands pull on nerve endings, because they are longer than the muscle that is contracting

It is essential not to put any form of heat or massage on the muscle for at least four days after the injury After this time, however, it is often necessary to start massage Bleeding is liable to occur if it is started too early, but after four days the injury, if it were incised would show considerable evidence of fibrous tissue formation, and the bruise would have gone quite solid Therefore there is no risk of further bleeding, and heat and massage will only

and working down. On page 125 will be found a list of the principal injuries to be expected in different branches of sport. Coaches, trainers and sportsmen may find this useful, in conjunction with the index, for quick reference to their own particular risks

In the treatment of sports injuries it has always been considered necessary to immobilize limbs and joints in *active* treatment, however, it is a cardinal principle that immobilization is seldom the right course. If we bear in mind the fact that there is nothing more important to an athlete than to maintain the tone of his muscles, and preserve his balanced condition, then an injury must be very severe before we treat it with any form of immobilization

For instance, if an athlete tears a muscle of the thigh, and this is strapped up even for two or three days, his balance can be completely upset. The question we have to ask ourselves is which is more important, maintaining his balance or immobilizing the muscle? Experience shows that injured muscles can only be prevented from wasting by continuous movement.

Just what does happen when a muscle gets torn? First of all there is always bleeding, because the muscle fibres are destroyed The first aim should be to minimize this bleeding and therefore it is essential to get the muscle under cold water as soon as possible One may be tempted to use massage and heat, but common sense will show that this can only lead to further bleeding It is equally wrong to use ice This causes spasm of the blood vessels in the muscle, which may be very difficult to recover from and so cold water is always better than ice

The immediate treatment for a torn muscle, therefore is to minimize the bleeding with cold water, and then get it moving again gently so that the patient can recover his balance at once If correct treatment is not carried out, there is considerable risk of developing a limp, which may still be visible weeks after the muscle is completely healed

2

Tuning up the Muscles

Strength in the human body can be conveniently assessed It is well known that a hundred-yard sprint in ten seconds is a very good performance Sprint athletes, however, unlike strength athletes, are not graded for this event. Body weight, height, length of the legs are of no consideration On the other hand, weight-lifting *is* graded To lift a barbell of three times as much as your own body weight from the floor, and stand up with it so that your back is erect, is an extremely fine feat of weight-lifting, and constitutes a performance equally as good as a ten-second hundred-yard sprint. I would personally class it as a superior performance. A bigger man lifting more weight would not actually be more efficient if he was lifting less than three times his own weight. If the sprinter and strength athlete are to be compared (which is pointless anyway) it would not be unfair to come down to basics And basics, to my mind, mean survival If a ten-second hundred-yard man and a three times body weight dead-lift man were locked up in the same room to fight it out my money would be on the weightlifter!

The strength exercises illustrated in this book are in my opinion – and I speak from considerable personal experience of them – the best there are They do not constitute a course of exercises A selection of them, and indeed quite often some simple variation of them, can be made after it is quite decided what is to be accomplished After

loosen things up and help to free the muscle from the bruise One should not rub any sort of concoction into the skin of the damaged area, because that blocks the pores at just the part where excretion through the skin helps to disperse the bruise (There is one exception to this rule, see p 108, *Shin Splints*)

The sooner you can put the limb through a full range of balanced movement, and really stretch it out, the better If you strap the limb, then you limit the free circulation through that area and prevent healing from being as fast as it might be. You might think that it gives support to the limb, but it does not all it gives is a false sense of security If that leg needs support, then it is not ready to do the additional exercise that that support makes you think you can do You will never beat Nature to it, and Nature knows how much to do Recover your balance, correct your style run or exercise it in as relaxed a state as possible and it will make very quick progress to recovery

In thousands of cases, I have never known anyone to re-tear a torn muscle this is because Nature protects one, particularly in the damaged area, against such a recurrence

In cases of torn muscles the general principle is – recover balance as soon as possible never restrict the circulation by strapping and avoid massage or heat for four days for fear of fresh bleeding Stretch out the muscles as soon as possible and put them through a full range of normal movement.

there is no need, except on special occasions, for supplementary stretching and loosening work. Both jobs, strengthening and stretching, are done at the same time Muscles, of course, are not immediately strengthened, but are weakened, by exercise. Strength is acquired by a process of breakdown nourishment and rest.

The exercises given in this book appear in two groups under each section General Exercises and Strength Exercises I call the latter Strength Exercises and not Weightlifting or Weight-training exercises, because the main purpose of the movements is to produce increased strength and so to create more physical power This can be done in varying degrees depending largely on the individual's requirements, and on whether he is prepared to spend sufficient time in acquiring the standard set. In this way all sorts of people, even those of forty years of age or more who may never have been athletes in any sense of the word and who may not have taken any form of exercise for years can acquire a standard of physical strength to shame many youngsters who fancy themselves as athletes

The business man or woman can be told if they are above or below par They can be advised of their condition, of the improvement they could well make of the approximate time needed to effect such improvement. The athlete can be advised whether in view of his general body power and always bearing his particular speciality in mind it would be wise for him to pay attention to certain weak spots, or to retire from competition for a time in order to take stock, to rest but not to lose touch, to get stronger but with a definite and carefully considered plan

Mr E. A. Cameron, who posed for the photographs, has trained on groups of these exercises for forty months Taking into account that he was over thirty years of age when he started, and that it has been a spare-time activity, he has made considerable progress having become much more powerful and better developed He still improves

this selection, the amount of work on each exercise (by this I mean the *exact* starting poundage multiplied by the *exact* number of repetitions), the frequency of the routine and additional advice regarding breathing rhythm and the time to be taken between the exercises and the sets or groups of each exercise – these details would all be required And very much required. A car might be a very good medium of getting from *A* to *B*, but unless the traveller can drive well, much time would be wasted and much damage might be done to the car!

No attempt is made to particularize on details which are essentially personal To do so would, I feel, merely add to existing confusion It is perfectly practicable, however to generalize on the method of performance And the method of performance I favour is the most efficient one – efficient from a physical point of view, not from the military point of view which unfortunately seems to pervade most P T and jerk routines The performance is efficient and enjoyable if the heart and lungs are allowed to work quite freely and rhythmically Generally speaking it is best to take a breath as the greater amount of work in each movement is being done and to breathe out during the other half In most strength exercises only a few continuous movements will be made at a time and it is therefore possible to set the breathing to a regular rhythm The rate of breathing should entirely dominate the rate of the movement in the exercise The most efficient rate is soon apparent after practice There is nothing to be said for forced breathing The amount of work being done will soon indicate – it will of course be an automatic action – when deeper breathing is required In very hard work it is best to keep the mouth open (probably another spontaneous reaction in most athletes) and the face and neck free of strain and flush.

The movements with very few exceptions should be full-action ones with full extension and full contraction If this becomes a habit in performing these strength exercises

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An important principle to remember is that muscles that have been properly tuned up and made one hundred per cent supple never tear Of course they will if they get a direct blow, but they do not just from normal exercise, no matter how strenuous it may be The best way of preventing one s muscles from giving any sort of trouble is to stretch them through a wider range of movement than one s particular athletic activity may demand of them. Most people, far from over-stretching their muscles, do not stretch them enough, and thus do not get the maximum efficiency out of them. A muscle that has a wide stretch automatically develops a greater power of contraction.

In some sports it is very important indeed to develop full range of movement at certain specific joints, and build up the muscles concerned to a maximum efficiency Divers very often suffer from painful shoulders and wrists and what they call buckling arms as the result of not developing sufficient strength in their arms It sometimes causes the back of their hands to strike their heads causing severe bruising Only exercise can build up such muscles, so that the joints do not buckle. Again whereas most of us can only extend our elbows, for instance to a range of 180 degrees some double-jointed people can go beyond this to about 200 degrees As you can imagine this is a disadvantage in a sport like weightlifting, where performance depends on an ability to lock the joint. Such people have in other words, to put their limbs through a wider range to complete the weightlifting movement, and will always be at a disadvantage compared with the type of person who has the smaller range It is not a disadvantage in diving however and can always be corrected by building up the muscles of the arms so that they are powerful enough to prevent buckling no matter how high the dive

No man is perfectly fit for any sport unless he has tuned up every muscle of his body to an equal state of suppleness The rugger player may have powerful legs just from play-

ing rugger, but it is not until he has really developed his back and abdomen as well, that he can claim to be getting maximum efficiency out of himself There are dozens of examples of this type of thing that one can give The cyclist has powerful legs, but often neglects his back The boxer, on the other hand, has great strength in his arms, but often less in his legs Some exercises and forms of sport, however, could claim to tone up almost all the muscles of the body, and particularly to be recommended are swimming general gymnastics and wrestling

What are these stretching exercises? An illustration of one will make others clear Let us suppose you are a cyclist who wants to build up the power of his back, just cycling will probably never do it, for one is always crouched over the handlebars But you still need a powerful back. The power will come into it by stretching the muscles, and then you will find that, far from cycling causing backache, the last place that gives out in a race is the musculature that you have built up by special exercises

Back stretching exercise (Fig 1) Place a rug on a plinth or table Lie flat on the table on your back so that the edge of the table is at the level of the small of your back, with your head and shoulders hanging over the end Over your feet from the other end of the table, place a loop of leather strapping so that when you bend backwards over the end of the table, your feet are held firmly You could also have another strap round the table, and over your knees or just below them. The aim is to bend backwards as far as you can and recover to the sitting-up position, with your hands linked behind your neck, as many times as possible At first you will find that this exercise makes your back and abdomen ache severely, and you will not be able to do it more than about ten times If you make a practice, however of doing the exercise every day, quite soon you will be able to work up to doing it fifty to one hundred times When you can do this, those muscles will be ten times as

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more work than they are accustomed to doing or, perhaps more accurately, more than they are tuned up to do When you go stiff at the beginning of the season, after your first game, that stiffness is purely due to the fact that muscles have been exercised for the first time and lactic acid has been liberated into them which has not been dispersed because the circulation through the area is so poor Making a muscle supple merely means improving its circulation and increasing the contractility of its fibres Every muscle fibre has its blood supply, but unless the muscle is continuously worked, *the small vessels to each individual fibre become* sealed off, and only those fibres that are used are fed with blood Tuning up the muscle is the process of reopening all the sealed vessels so that every muscle fibre is functioning and every blood vessel full of blood. In the perfectly fit athlete, one can detect a jelly-like consistency in his muscles when he is relaxed that is because they are full of blood. Equally when they are contracted, they are as hard as iron because of their strength and power

The expert can detect the degree of fitness in an individual s muscles by feeling them and noting how soft they are when relaxed and how hard they are when contracted Truly supple muscle that is being constantly used never has any fat between its fibres, nor does it have subcutaneous fat overlying the muscle. So one can also estimate fitness by pinching up the skin overlying muscle, and if one finds that there is only skin between one s fingers, this denotes that the underlying muscle is also well tuned up This is, in fact, *the well-known pinch test for muscle tone It should be* appreciated that it holds for every muscle of the body and not for any particular group of muscles Swimmers, even in first-class condition, require a thin layer of fat overlying their muscles because they are exposed to sudden immersion in cold water, if they lack this pad of fat, their muscles are more liable to go into spasms and cramp up This layer of fat is quite thin but provides a very good

powerful as they were when you started, and in whatever game you play, this increase in power can only lead to improvement in performance. You might think that nothing is to be gained by stretching the muscles through a range wider than normal, but if you have ever done such exercises you will know how beneficial they can be.

The same principle holds for stretching all muscles. Let me give another example. A hurdler may want to increase the power of his thigh muscles What better way of doing it than by high-kicking (see Fig 2), aiming at being able to stretch the quadriceps muscle by backward leg-swinging, as much as the hamstrings by forward high-kicking? A hurdler cannot claim to be getting maximum efficiency out of these muscles until he has learnt to do a vertical high kick. This stretching mechanism is also brought into play by the hurdler's favourite exercise of sitting with his legs forming a right angle, placing a matchbox between his legs, and bending his trunk and head down to pick it up with his teeth. Very few men can do it because very few are supple enough to stretch their muscles to such an extent.

The foot exercises and high-kicking that ballet dancers have to learn are perfect examples of the power produced by stretching Another illustration of how power and efficiency can be increased in muscles is shown by sprint runners Any first-class sprinter will tell you that he can soon get his legs into shape and feel that he is getting maximum efficiency out of them, but he will not develop maximum speed until he has brought into play the gluteal muscles of the buttocks and that can only be done when the legs have become super-tuned, and the glutei are called into action. Some sprinters estimate their state of fitness from the fact that their buttocks start aching and then they know that they are nearly there but of course it is not until those muscles cease to ache that they can really claim to be fit.

No muscle that is really tuned up ever aches Aching muscles are a sure sign that you are calling on them to do

more work than they are accustomed to doing, or, perhaps more accurately, more than they are tuned up to do When you go stiff at the beginning of the season, after your first game, that stiffness is purely due to the fact that muscles have been exercised for the first time and lactic acid has been liberated into them which has not been dispersed because the circulation through the area is so poor Making a muscle supple merely means improving its circulation and increasing the contractility of its fibres Every muscle fibre has its blood supply, but unless the muscle is continuously worked, the small vessels to each individual fibre become sealed off, and only those fibres that are used are fed with blood Tuning up the muscle is the process of reopening all the sealed vessels so that every muscle fibre is functioning and every blood vessel full of blood In the perfectly fit athlete, one can detect a jelly-like consistency in his muscles when he is relaxed that is because they are full of blood. Equally, when they are contracted, they are as hard as iron because of their strength and power

The expert can detect the degree of fitness in an individual s muscles by feeling them and noting how soft they are when relaxed and how hard they are when contracted Truly supple muscle that is being constantly used never has any fat between its fibres, nor does it have subcutaneous fat overlying the muscle So one can also estimate fitness by pinching up the skin overlying muscle, and if one finds that there is only skin between one s fingers, this denotes that the underlying muscle is also well tuned up This is, in fact, the well-known *pinch test for muscle tone* It should be appreciated that it holds for every muscle of the body and not for any particular group of muscles Swimmers, even in first-class condition require a thin layer of fat overlying their muscles, because they are exposed to sudden immersion in cold water if they lack this pad of fat, their muscles are more liable to go into spasms and cramp up This layer of fat is quite thin, but provides a very good

temperature regulator Although swimmers and divers need this thin layer of fat, they should not imagine that they have any right to carry any excess fat beyond this Indeed considering all types of sport, and the standards of fitness relative to each, I would say that swimmers and divers as a whole are normally less fit than the general run of athlete.

One cause of torn muscles is the habit of taking strenuous exercise suddenly and in an unaccustomed way when the muscles are not tuned up Obviously a sudden great strain on a muscle that has a sluggish blood supply is much more liable to do damage than it would to a well tuned-up muscle with a good blood supply That is why such injuries are very common at the beginning of the season, especially in rugger teams The fact that rugger is more liable than soccer to produce torn muscles is accounted for by the tradition amongst rugger players that they should never take the game too seriously so any idea of preliminary training has in the past been more or less taboo But this situation is fast changing and more and more rugger clubs are realizing the importance of that preliminary training

When one hears that one of the most famous athletes in the world has pulled a muscle as a result of not warming-up before a race, one can perhaps begin to appreciate the importance of warming-up and the continued haphazardness of training methods in this country In this particular case the athlete was a miler and suddenly decided to run in a quarter-mile race If he had paused to think, he would have known that there was an increased need to do warming-up because the quarter-mile requires a much more concentrated and explosive effort, imposing a much greater strain on the muscles than his usual distance.

In warming-up the difficulty is to strike the happy medium between getting all your muscles into a warm and relaxed condition, and exhausting yourself It should be easy enough, but very few people set about it in the right way The average runner requires from twenty to thirty

minutes of steady, regular exercise to warm up before a race There should be nothing all-out about it, but the aim should be to get the system ticking over , rather like warming-up the engine of a racing car The risk of injury to muscles is greatly increased by inadequate warming-up, if athletes realized this they would be much more careful

Muscles dislike sudden variations of temperature, and we should be particularly careful about this The track- or field-events man would be well advised to go out in his track suit before competing and keep up a steady routine of jog-trotting for twenty to thirty minutes until his first event It is no use doing it earlier than this and leaving an interval between your warming-up and your race You can very easily cool down in a few minutes and then the warming-up will have done you more harm than good The object is to enter the competition in as alert a condition of body and mind as possible If the blood is really flowing freely through the muscles and you have a moderate sweat on you, you minimize the risk of injury and you stand the best chance of consistently good performance

The silly practice of waiting about on tracks and playing-fields in cold and damp weather without adequate clothing is one which has probably led to more injury than anything else. This applies with equal force to half-time and other intervals of inactivity In the specialized sports, such as athletics, there is more need for warming-up than in most sports but ideally, and with scientific training, there is an equal need for it in any sport. Yet who has seen any rugger or soccer team do adequate warming-up?

Cyclists often offend against this rule, not only on the track but on the road They go out in all weathers wearing the flimsiest shorts and exposing their knees to all degrees of cold and dampness One of the commonest complaints among cyclists is Easter Knee, which is caused by exposure to damp and cold Women are just as guilty as men in this respect there is absolutely no difference between

the musculature of women and that of men, and women's need for adequate warming-up is just as great as any man's

In my earlier illustration of the miler who tore a muscle by running a quarter-mile without adequate warming-up, I should have pointed out that there is a greatly increased risk of injury if you change your sport or your distance and do not warm up properly for it. With adequate warming-up there is no increased risk of injury whatsoever, because if you are really fit all your muscles are equally supple, and so long as you get the circulation working through them they will only react normally to the change of tension. The truly fit man can switch from one type of exercise to a totally different one without the slightest danger so long as he does adequate warming-up

It has been suggested that some sports do not go with others that the muscle condition required for one is the opposite to that required for another People say, for instance that cycling does not go with diving that rowing does not go with swimming that gymnastics do not go with athletics that weightlifting does not go with aquatic sports That is all bunkum If every muscle in your body is equally supple which it should be whatever your particular speciality then it does not matter what form of exercise you take – your muscles will enjoy taking it. As an example of this, a friend of mine recently rode a hundred miles on a bicycle at speed and then immediately afterwards spent half an hour swimming vigorously in the sea. Because he was soundly fit, not a single muscle reacted abnormally or painfully He suffered not the slightest degree of stiffness He only felt gloriously and healthily tired

Cramp and stitch are amongst the commonest of the pains of sport in fact, hardly any athlete goes through his career without at some time or other being afflicted in this way It is important to differentiate between the two More nonsense has been spoken on this subject than on

almost any other A well-known B B C. sports commentator once said that nobody knew the cause or the cure of these pains That is very far from the truth It is perfectly well known how these pains are caused and how they can be cured I would go further, and say that any athlete who suffers from cramp or stitch is training incorrectly

Cramp is a spasm of muscles, most commonly of the thigh, calf or foot, due to the fact that they have been made to move through a range of movement that they are unaccustomed to The spasm can be brought on for instance, in driving a car, by sudden braking, or even, sitting next to the driver, by a sudden involuntary attempt to stop the car by jamming one's foot through the floor-boards I mention this because it is significant in understanding what causes cramp On such occasions the muscles are suddenly contracted in a way that they are not used to, and so the muscle goes into spasm The only way to get the muscle out of spasm is by stretching it, and thus if a spasm draws your foot up towards your head it can be relieved by forcing the foot away from you Another common cause of cramp is sudden exposure to heat or cold Muscles, as we have seen, dislike any sudden variation of temperature, and if they are continually irritated in this way it becomes increasingly difficult to stop them going into cramp whenever the conditions they object to are repeated

A year or two ago, on an Easter morning, I happened to be waiting for a friend on Putney Bridge He was an hour late, and during that period I counted something like 400 cyclists riding over the bridge, of whom more than three-quarters were wearing shorts It so happened that snow had fallen earlier in the day and it was extremely cold It is also probable that most of those young riders were out on their cycles for the first time since the winter, and many of them were running a grave risk of suffering from cramp It is such conditions that can do more harm to muscles than almost anything else If you are already apt to suffer from

cramp, the only way to avoid it is by avoiding sudden variation of temperature, and by keeping yourself as warm as possible One of the factors involved is bio-chemical there is no doubt at all that you get less tendency to cramp if you have plenty of salt and calcium in your blood. You can increase the amount by taking white fish or any form of calcium food, and also by taking more salt in your food.

Stitch is the same sort of spasm, but of a different type of muscle It most commonly occurs, in fact, in the small *muscles of the diaphragm and the stomach.* The stomach, gall bladder, liver and other organs in the abdomen are supported by small muscles and ligaments, and if these organs are overloaded with food or bile they tend to go into the spasm causing stitch more frequently than otherwise In some people the viscera are loosely supported and tend to swing about when they run, and this pulling on the small muscles may set off a stitch. As with cramp the pain can be quite easily cured by paying attention to the things that matter If the pain is due to loose viscera, then a routine of exercise to strengthen your abdominal wall will do the trick if it is because there is too much food in the organs, then obviously you need to find out what food suits you and probably eat less

That is why I say that nobody who is properly trained need ever suffer from cramp or stitch. It is useless to bend yourself up and hope to remove the stitch by squeezing it out of you, so to speak. That may relieve it temporarily but has not got to the root cause and thus you will get it again as soon as you repeat the action that caused it. The soundly trained man gets rid of these things as soon as he can by working out the cause intelligently It is foolish to continue suffering unnecessarily but one hears of so many cases of athletes having to retire, particularly from cross-country running because of this complaint. They would never do so if they realized that the cause is staring them in the face, and that it can be cured very easily

3

The Danger of Strapping

I attach so much importance to the subject of strapping, that I am giving it a chapter to itself Most books on the *treatment of sports injuries contain practically nothing* else but instructions on how to strap or support injuries in various ways with odd sorts of bandages The whole practice of strapping has been grossly overdone, and rather than encourage it, I have purposely avoided all mention of strapping in the treatment recommended in this book, except in the case of strapping for acutely sprained ankles I only recommend it there for the reasons explained, and because the ankle, being a weight-carrying joint, is liable to balloon up much more than other joints.

I disapprove of strapping in principle, because it is impossible to apply it without causing an obstruction to the circulation. It is usually applied in order to support a strain or pulled muscle, but I should have thought that it was obvious that the area thus covered is the one place most needing a free circulation. Far better than to give yourself any false sense of security by supporting it would be to exercise the part concerned, first gently and then more vigorously and then, if you get any reactionary swelling to elevate the limb until the swelling has gone down A little gentle massage also helps Next time you exercise it you will find that it swells that little bit less and you can continue to move it so much longer

Not only do trainers, coaches and masseurs apply

cramp, the only way to avoid it is by avoiding sudden variation of temperature, and by keeping yourself as warm as possible. One of the factors involved is bio-chemical there is no doubt at all that you get less tendency to cramp if you have plenty of salt and calcium in your blood You can increase the amount by taking white fish or any form of calcium food, and also by taking more salt in your food.

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The excuse that is commonly made for this practice is that you can lay the strapping on so evenly that it acts as a sort of bolstered-up skin covering, and this can only do good by decreasing risk from further muscle injury But this argument fails to take account of two vitally important facts One is that muscles are a different size when they are relaxed and when they are contracted, the other is that much more often than not the strapping is applied to *injured* muscles, and whenever a muscle has been injured there is always some swelling This is liable to increase when vigorous exercise is continued, and so the strapping is liable to become overtight and lead to obstruction of the circulation in just the one part of your anatomy where you need as free a circulation as possible The only permissible form of strapping would be one that could be changed and re-applied every few minutes.

Some people go in for the most wonderfully complicated methods of strapping in which they try to imitate the stresses and strains, and the direction of pull, of the muscles concerned This fantastic idea comes from America. In my opinion it is absolutely impossible to imitate by such a method of support the normal stresses and strains of these muscles It strikes me as incredible that anyone should imagine that you could remotely imitate the normal muscle actions by covering them with such supports, because there are so many factors involved Muscles are peculiarly sensitive things and they strongly dislike any unnatural or artificial means of assistance. This fact is demonstrated by the ease with which some muscles develop cramp and go into spasm. It can often be due simply to the pressure of bed clothes, or making the minutest movement in a slightly unbalanced fashion As most of these athletes are amongst the most super-balanced creatures in the world I cannot believe that it can be anything but harmful to them to try to speed recovery from injury by such artificial means as strapping

strapping much too frequently, but one often sees athletes in various sports applying it for themselves in a most unintelligent way In a recent weightlifting championship contest, I saw one national champion wearing a bandage support on one wrist Another had it on both wrists Both these competitors showed considerable venous congestion in their arms Presumably they felt their wrists needed such support, but building up the strength of those wrists by natural and vigorous exercises would surely be better than any artificial aid. One could perhaps excuse the use of supports on both wrists, but certainly not on only one for that must inevitably cause an upset in symmetrical balance, and to all athletes balance is of primary importance

Another sport in which one sees this silly habit of wearing supports is boxing a good many boxers insist on wearing an elastic knee bandage. I have often asked them why they do it, and I always get the same answer that the knee is a bit unstable and this support prevents it from doing anything tricky But no trainer should allow his man into the boxing ring unless he is soundly fit, for although strapping support may give a feeling of security in actual fact it always greatly increases the risk of injury In football too there is an old-established practice of wearing supports, but few footballers would do it if they realized its dangers

Another group of people who have been misled into thinking that strapping support can help them are the international-class sprinters Their most common trouble is pulled or slightly strained muscles of the thigh, and so one sees them running in international races with all sorts of weird criss-cross support round the injury As such sprinters are often amongst the most beautifully balanced individuals in the world their whole balance may be seriously affected by resorting to this device If you are going to support the one thigh, then you should support the other one too and then you get as near to an equal distribution of changed tensions as you possibly can.

exhausted and unable to go on The reason why muscle exhaustion sets in is simply that the muscles are not getting enough oxygen, and thus cannot get rid of the waste products of muscle action quickly enough, so that lactic acid accumulates in them, poisons them, and makes them cease to function -

It is obvious that such an oxygen debt occurs sooner in roller riding than in ordinary cycling, because one can make a greater effort in a shorter time. The fitter a man is, the longer he can keep going but it appears to me that almost anybody, fit or unfit, may consider himself qualified to have a go at roller riding, and racing This is very dangerous I have seen even the fittest of men vomit when on rollers, and this is only one of Nature s many ways of showing her disapproval.

Now why should a fit man vomit? The answer, which is tied up with this question of oxygen debt, gets one to the root of why roller racing is a bad form of sport In the first place roller riding is invariably done indoors, where there is nothing but dead air, no wind either in front or behind, and, in fact, no change of air throughout the proceedings And in this dead air the labouring, panting lungs are simply crying out for oxygen, and not getting it In the second place, not only is this atmosphere dead but the rollers themselves throw up any dust that may be about, and invariably a crowd of people stand around smoking cigarettes and adding to the prevailing stuffiness A third, purely mechanical, reason is the hunched crouching position of the rider and the continual thumping of the knees against the chest. This sometimes causes vomiting in time, and even severe gastritis

I have found that roller riders suffer more than most people from hoarseness, sore throats and colds The dust and stuffiness of the atmosphere cause irritation in the throat, which is aggravated by panting and once the throat is sore they are far more likely to catch colds, or other in-

4

The Fallacy of Roller Riding

Roller riding is much in vogue now, and has been for some little time, not only as a means of training for cycle-racing proper, but as a sport in its own right. But in my view it is useless for the one and downright dangerous for the latter.

For the benefit of the uninitiated, I should explain that in roller riding a bicycle framework – saddle, frame, handle-bars and pedals – is fixed over a metal or wooden roller, which is made to revolve freely by rotating the pedals. Quite a cult has grown up with endurance tests, sprints and so on. These roller cycles are not by any means the same as the machines used in hospitals and clinics for purposes of physiotherapy. Those fixed cycles are correctly geared, whereas roller cycles have little or no gearing and therefore provide insufficient resistance to the legs.

In ordinary cycling, certain resistances make themselves felt, such as those between the cycle and the road, and between the various bearings. Without these resistances, which are almost entirely absent in roller cycling, the rider becomes prematurely exhausted, and his legs, so to speak, run away with him.

What exactly is exhaustion? We breathe air into the lungs, and this air, in the form of oxygen, supplies fuel to the various muscles of the body. It is quite easy by over-exertion to develop an 'oxygen debt', and if the blood becomes short of oxygen, then one becomes winded and

recognized by doctors as a disease, is often found in roller-cyclists, and as a result of it the individuals concerned have had to be advised to give up roller riding

There is a psychological factor that weighs against roller riding, and that is the monotony It gives you no change of scenery, no variety at all, and I have often heard those who have done a lot of roller riding complain that three minutes on rollers feels like fifteen minutes on an ordinary cycle This shows what a tremendous amount of effort goes into a very short period of time The danger of such monotony and concentrated effort is, of course, the development of staleness Staleness is purely mental in origin and roller riding can produce it much quicker than anything else When the British cycle-racing team went out to New Zealand in 1950 they planned to do roller training on board ship I thought at the time that it might be a fairly adequate form of training, but experience showed that it was totally inadequate, and indeed ill prepared our team for road work or track racing

To sum up roller riding has so many dangers attached to it that it should be discarded as a means of scientific training for fitness It is an unnatural form of exercise, which can very easily over-expand the lungs and build up more muscle than Nature means you to have In addition it causes racing of the heart, development of an oxygen debt, and a muscle fatigue which is far from being a natural way of developing oneself

It might be argued that ordinary cycling has, to a certain extent the same effects True, but it has also the advantages of providing fresh air, an ever-changing environment, and sensible resistances for the leg-muscles to work against. Roller riding is a stunt, unsafe, unsound and insanitary Ordinary cycling, done sensibly to a definite schedule and under wise supervision, can be one of the best forms, if not the best form of training for fitness

fections, than they would be if their throats were sound. Another factor in this connection is the draughts that often prevail.

As a method of training for fitness, I am against roller riding I once saw two youngsters, one aged 14 the other 15, competing together on rollers The one was fit and strong the other far from it but the nature of the activity was such that the younger one was able to ride himself into unconsciousness and he collapsed, I believe, through developing a serious oxygen lack in his blood He went very blue, and when I sounded his heart I found it was racing at about 140 I felt it was disgraceful that he should be allowed to do this and afterwards he told me that he had never been on rollers before, and had done little or no cycle training If things like that are possible I feel most strongly that the sport should be discouraged

Older people who have taken up roller riding will no doubt disagree with me, but there are good reasons why they, too should think twice before continuing with it. For one thing it builds up large muscles, but muscles lacking in stamina or strength. Bulk of muscle is often misleading and this very explosive form of exercise builds up muscles which will never develop a natural strength Only riding against resistance can do this, and Reg Harris for instance, though he may be very fast on rollers, could never have developed such speed by training on rollers only, nor *would he have developed anything like the strength he* possesses This is worth bearing in mind

Then there is the suggestion that roller riding helps you to develop a large chest and good lung expansion. But there are many better ways of doing this than on rollers and, in fact, rollers are an extremely unwise way of doing it It is quite easy to overstretch lung tissue if you look upon your lungs as a balloon, or a collection of little balloons, it is quite easy to blow them up too quickly and too frequently, and thus weaken them. This condition

are brown sugar, honey, treacle, and white sugar I do not recommend glucose powder because it usually gives fit men and women indigestion. It is, so to speak, a pre-digested form of sugar, and whereas it is all right for old ladies who cannot digest the sugar for themselves, it is not the sort of thing a normally fit person should need to take You may find, however fit you are, that you do not digest even sugar very easily in that case if you develop the shakes you may well have to stop playing for a few minutes while the sugar takes effect. If, in training, you find that you have a habit of developing the shakes, you should take extra sugar an hour or two before playing this will enable you to get through any match without being affected in this way Know thyself' is the way the Greeks put it. Without knowing yourself your capabilities and your shortcomings, you cannot achieve fitness

It may be a counsel of perfection, but I always recommend cutting out all tea and coffee. Besides containing the drug caffeine, both these drinks, whether taken hot or cold, have a tendency to raise the body temperature artificially, which is not a good thing If, instead of tea and coffee, you make a habit of drinking fresh fruit drinks you will very soon find yourself fitter than you were It is also possible to drink too much milk in training Milk contains a very high proportion of fat, and if you drink a great deal of it you may find that the proportion of fat to sugar and protein is too high As regards alcoholic drinks, you will never come to much harm so long as you keep off all spirits Drink beer in moderation, and the red and white wines of Italy and France as much as you like These wines are natural foods and are always very nourishing The continental long-distance cyclists, even while racing almost live on them and they reach a degree of fitness which one seldom sees here

A common fault among athletes is taking insufficient fluid with their food Try to develop the habit of taking a

5

Diet and Dope

A detailed study of dietetics would be out of place in this book. I propose to deal only very briefly with its essentials Various authorities tell you to avoid this and avoid that but the important thing to avoid is faddiness The sort of person who develops fads and fancies about food is often the sort of person who spends a lot of his time fussing about minor injuries Of course if you have any digestive disturbance, whether indigestion or a skin acne, boils abscesses, styes or other septic foci, you must make every effort to discover the cause and remove it. It is frequently due to a dietary deficiency, the commonest cause of which is an unbalanced diet with too much carbohydrate (sugar) in it. This is easily corrected by cutting down the sugar and increasing the fat and protein. As it is also often a sign that the blood is over-heated, a good auxiliary remedy is to take some form of salts either first thing in the morning or last thing at night.

In some games particularly squash rackets one exerts oneself so furiously that one becomes short of sugar developing a feeling known as the shakes This is due to the fact that the sugar in the blood has dropped below a certain level. I have said elsewhere that the body cannot both digest food and take vigorous exercise at the same time, but sugar is something you can take in such a form that it can be easily absorbed and its effect felt almost instantaneously The best forms of sugar in order of digestibility,

training You cannot beat Nature to it, and although you may get a temporary improvement in your performance by taking drugs they always take out of you a great deal more than they put in. If on no other grounds than plain common sense, I would never recommend anyone to take them. The only right method of getting supremely fit and putting up consistently good performances is the natural way – plenty of regular hard training, with due attention to your particular speciality

The simplest form of doping is the habit of taking strong tea or coffee. These both contain the drug caffeine besides which tea contains tannin. Caffeine is a very effective stimulant and its effect during vigorous exercise may last up to half an hour On the Continent you can get tablets of caffeine of high concentration which have a similar effect to strychnine. They increase both your reaction time and also your visual and auditory acuity All human beings have a reaction time which can be measured it is the time that one takes to respond to any particular situation Although it is only a minute fraction of a second, there is no doubt that these drugs can make that time-lag shorter Not only that but caffeine and strychnine seem to enable you to see and hear things more quickly All this is very important indeed in racing, but, like so many drugs, these two will very soon completely undermine your general health, and are bound to shorten your athletic career if you take them in any quantity

Drugs of this kind have been commonly used in the past in cycle-racing and I remember once, when I was investigating the use of drugs in sport, watching a competitor on a Paris track injecting himself with a neat strychnine solution just before he raced. He had taken so much of it in his time that on this occasion he was taking in a single dose an amount which would have killed a normal person. Although he had not studied it scientifically, he found by experiment that it enabled him to react more quickly to

glass of cold water or fruit drink with your meals and also first thing in the morning and last thing at night. A fruit drink last thing at night is far better for a fit athlete than a glass of milk.

For some years, efforts have been made to find some tonic-like preparation that athletes can take during training to lessen the risks of loss of form, staleness, sleeplessness and the hundred and one things that so often hold things up Various milk compounds, vitamin mixtures and blood tonics have been tried but none of them seemed at all reliable except an ox-liver concentrate that really does seem to be the answer Besides preventing the things I have mentioned, it also seems to increase one s resistance against the common winter cold. Perhaps it is not surprising that it should, for so many of the athlete s troubles *start in the liver and if he tunes that up with a tonic he can* expect to be at an advantage over others who do not. This liver concentrate also contains the growth factor, which is essential to proper growth if he takes it his weight remains steady and no matter how much energy he uses it is replaced in extra-quick time It also greatly reduces risk of exhaustion.

Although the subject of dope and doping may seem to have little to do with dietetics it is necessary to mention it because of its connection with training Periodically, and in various sports competitors get the idea that they can improve their performances by taking various sorts of stimulants It has even been suggested that on some occasions teams have been doped in international events Although personally I have never known of a whole team being doped I have met quite a number of individual athletes who have been using such stimulants very often with temporarily beneficial effects But any form of doping besides being unethical and very unsporting is also in the long run bound to be detrimental to health.

This subject is all related to the right mental approach to

training You cannot beat Nature to it, and although you may get a temporary improvement in your performance by taking drugs, they always take out of you a great deal more than they put in If on no other grounds than plain common sense, I would never recommend anyone to take them. The only right method of getting supremely fit and putting up consistently good performances is the natural way – plenty of regular hard training with due attention to your particular speciality

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any moves by his opponents There have been scandalous examples of young and well-known athletes taking these drugs and although their performances have been wonderful for a short time, they have suddenly died of heart attacks or other complaints which, in the post-mortem have been found to be due to the effect of the drugs In the 1948 Olympic Games in this country a young foreign champion won his Olympic gold medal although it was obvious to the expert eye that he was racing under the influence of drugs There was nothing that I or anybody else could do about it because it is one of the most difficult things in the world to prove, and any open accusation might have involved an action for slander but in this particular instance, the boy s trainer actually said, within my hearing, that their one aim was to win this Olympic Medal that they would stop at nothing to do so and did not mind if the young champion himself never raced again. Although he won that title, he has never since been anywhere near as good as he should have been. At that time he was an exceptionally fine athlete, in fact, I would have classed him as one of the greatest in the world, but because he was allowed to take drugs he never developed as he should have done His case should be an example to all athletes who are tempted to take stimulants

Another common drug that has been used by athletes is benzedrine, which was the stuff issued to the troops during the war prior to going into action or on prolonged manœuvres It wards off sleepiness and also acts as a general stimulant, but, like all other drugs its after-effects can be extremely harmful and certainly you lose much more than you gain by taking it. I always feel that dope was more used in the past than it can ever be in the future. It was possible in earlier days for a doped athlete to beat his opponent, but nowadays the likelihood of anyone who is under the influence of drugs being able to defeat a scientifically trained opponent is becoming less and less

There has been much talk lately about the taking of oxygen at half-time in soccer and rugger matches There is nothing new about this, however, for it has been tried for many years past, whenever boxers go to a place like Johannesburg, where the air is more rarefied than here, their managers always hope to save time in acclimatization by giving them oxygen. As always with attempts to by-pass Nature, little advantage is acquired

No one would deny the psychological effect of such attempts to boost a team, particularly if accompanied by much publicity and noise, but there is little if any other effect, and the results for obvious reasons, do not last long To claim that a team might revive and become noticeably less tired with such treatment is pure imagination. It could only have a dramatic effect on someone who was far from fit. Trainers would be better advised to ensure that their teams are as fit as possible by the time they enter competition.

The various alcohols are often used as stimulants, but I need hardly point out that the effect of these on the liver is liable to lead to all sorts of digestive complaints So don t take a glass of sherry and a raw egg, or a tot of brandy or whisky, just before a race Take something that will be both nourishing and appetizing and give you the necessary psychological feeling of refreshment.

The ideal mixture is a tumblerful of water flavoured with lemon or orange essence, to which is added as much sugar or honey as you like, and half a teaspoonful of salt You will never find anything more useful to you than that At half-time intervals, some teams impress the spectators by having some wonderful concoction taken out to them by their trainer This usually contains sherry or one of the other stimulants I have mentioned, but the habit of sucking an orange or a lemon is in actual fact far more reliable, and better for you, than anything else can be, except possibly the drink which I recommend above

We have seen that energy cannot be replaced as it is expended, food which you take at any particular moment will not be converted into energy for several hours In fact, the body cannot both digest food and take vigorous exercise at the same time This is borne out by such an outstanding athlete as the Marathon runner and world record holder, Jim Peters In the 26-mile race he did not even moisten his lips, and he took no sort of nourishment from beginning to end, because he knew that all the energy he called upon came from the store that he had built up in his liver during the previous weeks So what was important to him was the nourishing food that he ate in preparation for the race. An interesting point is that immediately he finished he was liable to feel very exhausted and hungry and for a long time he could not find any drink that he could take without feeling sick He finally found, however, that he could drink a mixture of blackcurrant juice, salt and water

In certain sports, such as cycling, long-distance races become tests of endurance, and besides exhaustion one may have to compete with pain particularly in the back. That has led some people to seek a drug that will act both as a stimulant and a painkiller Such a combination is made commercially and contains benzedrine and aspirin. But it is impossible to justify even this degree of doping, not only on ethical grounds, but because the right way of guarding against an aching back or an exhausted body is adequate and regular training There are no short cuts to supreme fitness Anybody who hopes to find one would be better advised to give up sport and take to dominoes

6

Self-Confidence and Staleness

Nothing is more important to an athlete than the development of complete self-confidence and so strong a belief in himself and his own ability that nothing can deter him The greater the self-confidence, the less becomes the risk of injury The star performers in any sport are always those who injure themselves least This is because they learn to relax and to keep themselves perfectly fit. Of course there are certain games in which clumsy performance by others may involve risk to even the finest players, but because of the alertness of their minds and the agility with which they move, they nearly always escape the catastrophes which so often overtake lesser performers

No one can develop this supreme self-confidence if he is being worried by extraneous factors, such as personal or domestic problems You cannot put up a consistently good performance in sport without also having the ability to sort yourself out This psychological aspect of training is of fundamental importance you should never neglect the need to be yourself and to try and express your personality as you want to Any form of repression or frustration is liable to react on your athletic performance

I do not mean to advocate licentiousness or loose living Far from it, because an essential corollary to true self-expression is self-discipline This should take the form of regular habits, and, indeed, a regular training routine, in which you keep strictly to any rules you set yourself This

routine should never interfere with any form of normal behaviour, and married men and women should remember that a continuance of normal sexual relationships can only do good in helping them to achieve athletic fitness One well-known athlete of my acquaintance thought that it would be harmful for him to have any relationship with his wife within two or three weeks of an international event. He therefore tried to repress his natural urges, but he found that Nature had to get an outlet. He found this out the night before the great event, so that he was thoroughly demoralized and showed up very badly in his race The supremely self-confident athlete knows himself so well that he has no need to run risks like this He is always perfectly natural and, because he always has a regular routine of sleeping eating and other ordinary habits of behaviour, he enters his events in the confidence that there has been no change in his routine – nor anything to upset him.

There are other factors to be considered in this quest for what one might call psychological fitness For instance, you cannot possibly get down on your starting blocks feeling absolutely on top of the world unless you have had a thorough medical examination and been told that you are soundly fit and free from any sort of infection. So it is a good idea for every athlete to undergo a thorough medical examination at the beginning of every season.

It is also important to know what sort of food suits you and what sort does not, so that you can take normal meals at normal times and know that nothing will upset you before a race. A great many athletes find themselves so worked up before a race that they can eat nothing They may even find themselves being violently sick. This shows a lack of self-confidence though it may also show a certain degre [illegible]ic superiority over the type who is unem[illegible]oth mentally and physically sluggish. When y[illegible]is nervous state you produce an excess of [illegible]ch tends to make you sick but also puts you

into a state of awareness and alertness There is no need to relax this tension, because it is natural and beneficial, but it is important to work out what foods suit you and when and how to take them so that they do not cause sickness

Youngsters sometimes feel ashamed at getting het up in this way, but it may help them to know that every great athlete does the same, no matter how calm he may be, or appear to be. Dr Frank Aaron used to suffer agonies from nerves before running, and he always tried to conceal it from everybody, until he realized that everybody else was feeling the same way When he admitted to his fellow runners how terrible he felt, and laughed about it with them, he found the problem became much less severe

The career of the great sprinter E. McDonald Bailey is a graphic example of the value of self-confidence For years he was always getting muscle trouble and all kinds of little things would upset him. His performances were most inconsistent and unreliable, not because of the state of his muscles but because of the state of his mind He did not completely and wholly believe in his ability to beat the world. But when he did finally gain that supreme self-confidence he ceased to have muscle trouble, and ran better than he had ever run before In the old days it could easily happen that some remark made by another athlete or one of the officials would so upset Mac that he would run badly, but nowadays he has such faith in his own fitness and ability that such things have ceased to worry him. That is, in fact, the ideal state at which all athletes should aim.

McDonald Bailey is a living proof of another interesting point. Only ten or fifteen years ago it was generally believed that the sprinter's best years were the early twenties But Mac has shown that his best years were in the thirties, thereby bearing out what is believed by those of us who approach this subject scientifically that no human being develops fully until he is at least twenty-five years old Your bones and your muscles continue to grow until

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state in less than two or three weeks If the varicose veins are very slight, and show themselves as a bluish mottling of the skin, you should ignore them altogether Athletes often worry about them when, if they did but know it, such things are quite harmless, and may be ignored

Another form of varicosity is haemorrhoids or piles These are usually caused by allowing yourself to get constipated and straining No fit man ever takes laxatives or any form of aperient. He gets his bowel into first-class working order in a natural way by eating natural laxatives in the form of fresh fruit.

Although you may know plenty of people who smoke and seem to take no harm from it, the scientifically trained athlete and the person whose one aim is perfect fitness does not smoke The nicotine in tobacco may have only a small effect, but it is a cumulative one The connection between smoking and cancer of the lung and bronchial tubes is not yet established beyond doubt, though much research is being devoted to it but the fact that smoking affects the stamina is too well known to need comment The athlete who does not smoke will undoubtedly reach that extra pitch of fitness which would otherwise be beyond his reach

Another common problem for athletes is infection by a cold or sore throat or anything in the nature of catarrh, hay fever, flu, or the many other minor infections that beset us The answer is to continue steady training, but under no circumstances to do anything really exhausting like racing or taking part in an important competition While the infection is on you, there is always a risk of spreading it if you get over-exhausted You do not spread the infection by moderate training – taking it up the road , as the cyclists would put it – instead, you tend to throw it off Many a time, by adopting such a routine an athlete has developed a good sweat come home to a hot bath and bed and by the morning been completely cured

Another problem, or series of problems, concerns the

then, and, in fact, you are much more likely to develop experience, stamina and speed five or six years after you have reached this age of full growth. There is no physiological reason why an athlete should not go on improving his performances in almost any sport up to the age of 40 or 45 Perhaps the sprinter in both track and cycle events might show a little slowing down by that age, but if he was able to continue a whole-time concentration on keeping fit, there is little or no reason to suppose he would deteriorate I do not support the view that he need lose any of his speed at all before he is about 40 Perhaps Mac will go on to prove me right in this respect.

That you can develop stamina to an increasing degree right into middle age is proved time and time again Climbing Mount Everest was quite an exceptional example of endurance and required tremendous stamina on the part of the team concerned Yet although some of them were young men, the leader was well into middle age, and no one will deny he was able to play more than his fair share in the expedition s efforts Jack Holden the great Marathon runner retired at 45 while still supreme champion – not because he was unable to maintain his form, but in order that he might spend more time with his family

I have already mentioned the importance of the periodic medical examination. This should be made the opportunity of seeing that such things as teeth are in good condition. And if you tend to develop varicose veins then you should seek the doctor s advice about them. He will tell you that *the fitter you get yourself the less protuberant they become* and the less nuisance they will be to you. Unless they are very troublesome, they should be left entirely alone and there will be no need to do anything for them until long after your athletic career has finished. If they do happen to be very severe – and this is very rare in my experience of young athletes – they can be injected and tied then, if you train properly after the operation, you can get back to a fit

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Staleness is, in a way, the reverse side of the medal To avoid it, one must understand just what it is Basically it is a mental phenomenon, caused by monotony It shows itself in a great number of variations, and in many different ways of a physical nature. The athlete who goes stale not only loses all interest in his sport, but he develops sleeplessness, loss of appetite, headaches, nausea, listlessness, diarrhoea, constipation or other digestive disturbances As I have said before, it does not occur in the properly trained person and it is a sure sign of wrong training Once it has developed, however, there is only one reliable way of overcoming it in a minimum amount of time, and that is by introducing some alternative form of recreation and trying to take the man s mind right away from his usual sport.

Many trainers advise complete rest for a week or two, but this is extremely unwise. When muscles are in a really supple condition, the expert can detect an almost microscopic deterioration in their tone after a single day s lay-off After a week s rest, the deterioration can be detected by anyone and is a serious matter to the individual concerned, particularly if it has occurred a week or two before some big event. Imagine a rowing Blue going stale about a month before the Boat Race If he rested, even for a week, it is inconceivable that he could recover his best form in time for the race, whereas if his interests were guided to new channels during that period and he continued to take adequate exercise, he would almost certainly be in perfect condition. The interests of the team have to be considered and the coach has to weigh the pros and cons of taking a man away from the atmosphere of the team for a time

I mention rowing men in this connection because there is no sport where staleness occurs so commonly I believe this is entirely due to the habit of changing coaches at regular intervals during the training season, so that methods are changed too and one personal opinion is matched against another – a practice which almost invariably

control of one's weight. If you find yourself putting on weight, there is only one way of reducing it scientifically, and that is by eating less food and taking more exercise. You can wear extra clothes to make you sweat more, but you will never reduce by such means as turkish baths.

This holds for women as much as for men, just as the correct weight for a woman, as with a man, is when the muscles are wholly free from fat. At present in this country women do not train anywhere near hard enough and I do not know more than thirty or forty women athletes who carry no superfluous weight, to say nothing of other aspects of fitness. Women must learn to do a great deal more training than they are doing at present.

Another problem for women is whether or not to compete at the time of their periods. Their best course is to treat the matter as a perfectly natural process and compete normally. In a recent Olympic Games there was much concern for four women members of our team, and I was asked if I could give them injections to delay the onset of the period. I considered such a suggestion most unethical, and was interested to see that these four girls finally performed better than any of the others. That bears out what I have many times proved to my own satisfaction, that Nature knows much better than we do.

To sum up, you cannot have complete self-confidence unless you are regular in your habits and understand your own peculiarities and idiosyncrasies. You must know what food you can or cannot eat, how much sleep you need and, really important, so organize your activities that your performance is never upset by flurry and muddle. I am thinking of a runner who, though he disliked train journeys, took a long and complicated cross-country journey by rail to an athletics meeting, arrived breathless with hardly time to change, and utterly failed to do himself justice. This kind of thing may seem trivial, but the experienced athlete knows the frustration produced, and guards against it.

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7

Head and Neck Injuries

The injuries of the head that one comes across in sport require hospital treatment more often than not If there is any suspicion of concussion after a blow, it is most important to keep the individual quiet and in a dark room until he can be got into hospital Rugger players often sustain such an injury and are found wandering about the field not knowing what they are doing Even minor forms of concussion should immediately be taken to a quiet place and not allowed to continue to play, no matter how persuasive they may be about going on. If you have sustained concussion, it is dangerous to continue to play because any aggravation of it may lead to persistent headaches and black-outs

Ear injuries These occur most commonly in boxing, and if there is any suspicion whatever that such an injury has been sustained it must be thoroughly investigated by an ear nose and throat specialist. Such injuries are very commonly neglected, with the result that complications occur, and deafness and other complaints arise quite unnecessarily If there is any likelihood of the ear having been damaged, always get it attended to by a specialist, because it is far better with so sensitive a mechanism to be safe than sorry

Cauliflower ears Again usually a boxers injury, though it may occur in the scrum at rugger Owing to the nature of the anatomy of the ear, bleeding (bruising) may occur

leads to trouble and undermines the athlete's confidence. The ideal understanding between coach and athlete often takes months to develop, and to break into it always occasions setbacks There are hundreds of cases where an athlete has been associated with a particular coach for years, and results have proved the value of such an association.

Although athletes obviously have to work at their own particular speciality, it is a mistake to believe that one should not introduce variety, and spend some time taking part in *some other form of recreation. Of course this should* not be allowed to cut into the time normally given to one's speciality, but the great majority of athletes do require more variety than their one speciality gives them. Some sports have better counterparts than others but swimming is an almost universal alternative, besides being one of the best forms of exercise for the use it makes of almost every muscle in the body Runners and cyclists are often afraid of it because they think it stiffens their muscles. If you go swimming about once a month it will stiffen you up temporarily but if, in your training routine, you do it as an alternative to your speciality at least three times a week, you will very soon gain nothing but benefit from it. The idea that cold water causes any damage to muscles is pure fantasy You will only suffer stiffness while you remain unaccustomed to it, and the same thing can be said for any form of recreational athletics Of course it would be foolish to swim just before a tennis athletic or cricket match, for water gets into your eyes and ears and affects your balance and sight but that is no reason why swimming should not be a regular part of your training routine

Walking is another very good trainer, besides affording an excellent form of mental relaxation. Again if it makes you stiff you are not as fit as you ought to be

Bruised eyes Bruising of the eyes occurs very commonly in boxers and again may be of the upper or lower lids or the surrounding skin of the forehead and cheeks It is most important to disperse the bruise as soon as possible or it develops into something very solid and persistent. Although the old-fashioned treatment of applying a steak was good a far more effective method is to knead the area gently for twenty or thirty minutes with the middle finger and forefinger This is particularly useful in the cases of bruises below the eye The kneading should take the form of moving the two fingers in small circles over the bruised area, applying an increasing pressure If this is properly done, it will be seen to disperse the bruise, and in fact quite a severe bruise can be completely dispersed within a few minutes A trick that boxers and their trainers use very commonly achieves the same end in a rather different way It consists of applying a mixture of milk and salt to the damaged area. The idea is that the milk makes a good lubricant for the kneading process and the salt draws off the serum or fluid in the bruise, once the pores are opened by the milk, which should be hot. Care should be taken to avoid letting the mixture get into the eye, where it will cause smarting

Dislocation of the jaw If there is any suggestion of a fracture or dislocation of the jaw, hospital treatment must be sought at once. No first-aider, trainer or masseur should ever attempt to reduce it himself, because it is an injury which can be accompanied by serious damage to nerve tissue and any unwise movement of the bone may lead to serious complications Of course a supporting bandage should be applied before the patient is moved into hospital

Cracked lips This condition is included because it occurs so commonly amongst summer game players and can be a great nuisance to them It may be caused by sun, wind or cold. There is only one effective way of getting rid of it:

between the skin and the cartilage of the lobe of the ear and thus requires immediate treatment to prevent a cauliflower ear developing A doctor should be called in to draw off the blood and in its place inject a minute quantity of sclerosing material Manual pressure on the affected lobe for a few minutes after the injection of this fluid has proved effective in preventing recurrence of the trouble

Torn ears Sometimes the ear gets badly lacerated and advice should always be sought from a doctor as to whether it needs stitches in it or not It is always very stupid to leave such a wound to gape

Ear plugs Swimmers and divers are always faced with the problem of whether or not to wear ear plugs Nature has a perfect way of altering the pressure in the middle ear according to variations of pressure externally and unless there has been damage to the ear drum by direct trauma or a previous infection, they should not wear any form of ear plug By doing so they actually increase the risk of damage to the ear drum.

Cut eyes This is a common injury in boxers It may occur over the eye or under it. Because it is an injury that can be repeated many times in the same individual it is important to avoid stitches whenever possible This is because, although stitches may close the wound effectively enough, they lead to the formation of scar tissue which may prove more easily torn than normal tissue Trainers have developed the treatment of such injuries to a fine art. They get the cut between their fingers dab it with 1 1000 adrenalin solution to stop bleeding clean it up thoroughly with spirit or ether and then close the two edges of the cut as firmly as they can while they apply collodion. When it has firmly set, they apply very small pieces of plaster across the cut, to make sure that it remains free from any risk of re-opening

Broken noses It is almost impossible after sustaining an injury of the nose to know at once whether it is broken or not, and if there is any doubt, *it is best to get hospital* treatment at once Any bleeding is best controlled by firm pressure over as wide an area of the nose as possible, and this pressure should be made between the finger and thumb If you keep the pressure on firmly and evenly for a very few minutes, most people s blood will clot and the bleeding will cease

NECK

The only conditions we need deal with in the neck are those in which damage to muscles has occurred so that adhesions have formed later, causing limitation of movement and pain. Broken bones in the neck, and such things as dislocations, must of course always be dealt with in hospital, but these limiting injuries of the soft tissues can be quite easily and adequately dealt with by club masseurs They may cause fibrositic pain, and even a plain straightforward fibrositis is often best dealt with by the same procedure

Manipulation of neck Figure 4 shows the movements to be made. The aim is to put the head through a full range of movement with the neck, so that any adhesions or fibrous tissue are torn down and free movement restored This manipulation should of course not be attempted if there is any risk whatever of there being any underlying bone damage Another type of injury which may cause complications if a manipulation is done is an old shrapnel wound or any other injury which has resulted in a small piece of metal being left in the neck. Otherwise the whole procedure is quite straightforward.

Place the patient on his back with his head hanging over the plinth and resting on your knees as shown in the picture Get him perfectly relaxed and hold his head resting on your knees, but supported also by your hands The head

get out of the habit of moistening your lips with your tongue, and before exposure to the elements, apply olive oil along the lips, but don t let it spread on to the face. Repeat the treatment as frequently as you can to assure the lips being well covered with it continuously for at least four days The commonest cause of the trouble, besides the elements, is the habit of licking one s lips with the tongue, and any form of treatment with oil is useless unless this habit is stopped

Bitten tongue This is not an uncommon injury, but luckily the tongue is such a good healing area that even a severe bite heals in a very few days A minor injury is best forgotten, but if there is much bleeding it will prove very difficult to stop, and the sooner a doctor is called in to stitch it up the better

Particles in the eye Small particles that get into the eye may take up one of three different positions, which can be quite easily differentiated A particle of dust in the lower lid can easily be removed with the corner of the handkerchief A particle of dust or grit under the upper lid can only be effectively removed by everting the lid on a matchstick as shown in Figure 3 Put the matchstick on the upper lid and then roll it up and over the lid so that the inside of the lid turns out. Although it looks as though it may be very uncomfortable for the patient, it does not do him any harm and will enable you to take the fragment out with the corner of a handkerchief The third group is that in which the fragment lies on the ball of the eye, and if you have failed to find it under the upper or lower lids you may see it – it may be very minute indeed – lying right in front of the pupil and stuck on it. This is the type that must be taken to a doctor because only a doctor has the instruments to remove it with and in any case it cannot be removed until the eye has been anaesthetized

Broken noses It is almost impossible after sustaining an injury of the nose to know at once whether it is broken or not, and if there is any doubt, it is best to get hospital treatment at once Any bleeding is best controlled by firm pressure over as wide an area of the nose as possible and this pressure should be made between the finger and thumb If you keep the pressure on firmly and evenly for a very few minutes, most people s blood will clot and the bleeding will cease

NECK

The only conditions we need deal with in the neck are those in which damage to muscles has occurred so that adhesions have formed later, causing limitation of movement and pain. Broken bones in the neck and such things as dislocations must of course always be dealt with in hospital, but these limiting injuries of the soft tissues can be quite easily and adequately dealt with by club masseurs They may cause fibrositic pain, and even a plain straightforward fibrositis is often best dealt with by the same procedure

Manipulation of neck Figure 4 shows the movements to be made The aim is to put the head through a full range of movement with the neck, so that any adhesions or fibrous tissue are torn down and free movement restored This manipulation should of course not be attempted if there is any risk whatever of there being any underlying bone damage Another type of injury which may cause complications if a manipulation is done is an old shrapnel wound or any other injury which has resulted in a small piece of metal being left in the neck. Otherwise the whole procedure is quite straightforward

Place the patient on his back with his head hanging over the plinth and resting on your knees as shown in the picture Get him perfectly relaxed and hold his head resting on your knees, but supported also by your hands The head

and neck should be in a straight line with the body, which may necessitate raising your knees to raise the head. Having got him in that position, turn his head sharply first to the left and then to the right as far as you can, then bend the head sideways to the left and to the right. Next force the head forwards on the neck and then as far back as you can. Very little experience will soon show you if there is any limitation of movement in any direction, and if there is you should attempt to force the head through this movement.

EXERCISES

After such a manipulation, it is important to keep the neck well exercised One good exercise is to put the head through the following 12 movements, repeated several times Make sure you point out to the patient that it is most important to force the head fully through each movement as he makes it. 1 Look to the left. 2. Look to the front. 3 Look to the right. 4 Look to the front. 5 Bend the head to the left. 6 Look to the front. 7 Bend the head to the right. 8 Look to the front. 9 Bend the head as far forwards as you can. 10 Look to the front. 11 Bend the head as far back as you can. 12 Look to the front.

You will see that on each alternative number, that is, 2, 4, 6 8 10 and 12 you look to the front that means you stand with your shoulders completely relaxed, your head and neck straight and looking straight ahead of you. As numerous shoulder muscles are also involved in any manipulation of the neck, it is always important to keep them well exercised too Alternate shoulder-shrugging as shown in Figure 5 is one way of doing this shrugging both shoulders together can also be done

STRENGTH EXERCISES FOR THE NECK

Figure 6 The shape of all heads being different, the neck strap is best made for the individual The body should be

positioned with a slightly arched back The head should be lifted up and down in a full movement The same movement can be performed with the head turned to either side The body should be kept still and the movement come from the neck joint.

Figure 7 Disc weights can be supported on the forehead by using a towel pad The arms are used only to maintain the position of the weights The head is lifted from the bench until the chin almost touches the chest Best to lift the full weight of the resistance for each repetition and therefore to momentarily relax the neck muscles in between while the head rests on the bench. The same movement can be performed with the head projecting over the end of the bench, but this is rarely necessary either for strength or development.

Figure 8 The body should be kept quite firm and the back slightly arched. Resistance is given to the downward pressure on the head After it has been pressed steadily down it is best lifted up again without applied resistance The head should never be jerked down. Pressure is best given from both sides

Figure 9 The head is pressed down and lifted back much as before More pressure can be applied and more resistance can be given. Again, pressure is given from both sides

8

Back Injuries

For the purpose of classification of the injuries of the back, it is best to divide the area into Upper, Middle and Lower, although there are, of course, injuries which occur to all three parts of the back.

UPPER BACK

Swimmers, rugger players and other ball-games players often twist their backs in the upper region, and as with a muscle strain anywhere in the body the treatment is quite simple and has been given earlier in this book. As in other cases, immobilization should never be allowed the aim is to activate the muscles as quickly as possible stretch them out and get the circulation through them working normally

Very often, when a muscle in this area is strained or torn, it feels as if something clicks and the patient gets the impression that the cause of the trouble is a displaced bone in the spine I have known many backs to be wrongly immobilized in plaster because of this whereas careful examination will show that the centre of the pain is not in the spine but in the musculature lateral to it, or even under the shoulder blades Injection of proctocaine into this tender spot will abolish all pain and prove that the spine has nothing directly to do with it. The best exercises for torn muscles in this area are given in the group of exercises at the end of this chapter (p 66) They include

any that exercise the inter-scapular muscles, the shoulder muscles, and the neck muscles

Fibrositis Although this condition occurs anywhere in the body where there are muscles, there is no doubt that the commonest site of it is between the shoulder blades, in the back, and, of course, in the neck. It is important to try and understand what causes fibrositis It is believed to be due to a poisoning of muscle fibres by stagnant blood In other words, if you keep yourself fit, so that the circulation in your body is a hundred per cent, and so that all the muscles of your body are supple, it is quite impossible to get fibrositis I think the reason why so many so-called athletes get it is because, whereas they exercise their legs and arms actively enough, they very often ignore their backs and almost pride themselves in having a stiff back, or even a bull neck. Fibrositic muscles have a doughy, brawny feel, which is quite unlike a muscle that is tuned up People who suffer from this complaint need only bring the affected muscles into play, and exercise them properly, to be rid of the condition altogether The exercises given at the end of this chapter will do that activating

Besides the stagnation of the blood in the muscle fibres there is also the possibility that the blood itself is not as wholesome as it should be, and may be over-acid, or containing infective organisms which cause the trouble That is why it is so dangerous to take any violent exercise when one has a bout of flu or anything more severe of an infectious nature because one spreads the bugs' all over one's body and they have a habit of settling in muscles and causing severe pain and even something worse

MIDDLE BACK

The characteristic pain of the middle back is called Lumbago In actual fact it is no different from the fibrositis of the upper back. It is important, however, to know that it is

lumbago and not any of the things that I describe later as being mixed up with it, and which occur lower down the back. The one that it is always getting mistaken for in the middle of the back is the Slipped Disc. Now the slipped disc is the fashionable complaint of the day, but is a thing that occurs much more rarely than people realize Not long ago one of the most eminent surgeons in London told me that he reckoned that he saw about five per cent of so-called slipped disc cases in his region, and he operated on one per cent of that five per cent. As you can see this makes a very low percentage of the total cases The vast majority of people who suffer from the sort of slipped disc that requires operating on are of the non-athletic type and if ever I get an athlete showing the signs of a slipped disc, I always first of all recommend him to try the active treatment. It has to be an extremely severe case before any harm can be done by the active treatment, and I always warn them that if they notice anything like a footdrop or anaesthesia in any part of their legs then that is the time to report the matter and get it seen to immediately If however a patient complains of pain in that region of the back, sometimes shooting down the back of the legs to the knee, or even below, and he is put on to the special back exercises he very soon throws off the trouble altogether

I would always demand an X-ray of any serious case, but to immobilize an athlete is, I think, almost always wrong until one has at least concentrated on the active routine for two or three to six months. The exercises are given at the end of the chapter (p 65)

The treatment of lumbago however, is different. It is due to a poisoning of the muscles by something in the blood, coupled with the fact that stagnant blood has collected in them. Fibrositis of the upper back should always be activated, but with lumbago I recommend 24 hours in bed with a hot-water bottle and a really good sweat, taking

something like aspirin in order to enable one to sleep and forget the pain. Do not stay in bed longer than the 24 hours, no matter now difficult it is to get up next day Get up, and then start the vigorous exercise routine, and you will have it out of your system in no time This treatment obviously will recommend itself only to people who are fairly young One could not expect old ladies, or old gentlemen for that matter, to do it, and therefore the treatment for lumbago for them is different, but if you are an athlete, or fancy yourself as one, the correct way to get over a dose of lumbago – not that you ever ought to have got it in the first place – is a sweat in bed for 24 hours and no longer, and then go out and exercise it.

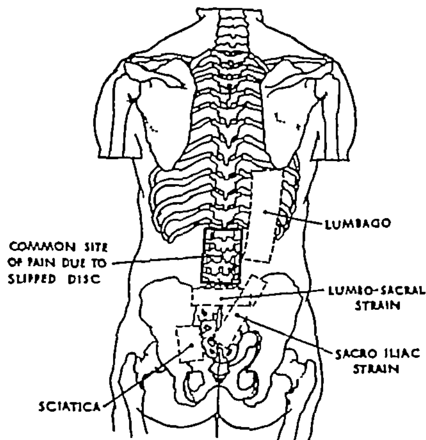
LOWER BACK

It is in this region of the back that most of the troubles arise There are at least four conditions which most people confuse, but which are quite different. Firstly there is *Sacro-Iliac strain*, which occurs (see the illustration on page 62) over the sacro-iliac joints, and often occurs as a result of a sudden violent twisting of the hips The best exercise for it is what we call the scissors , described later in the chapter (p 66) I find that usually it is best to manipulate the joints before the active treatment is commenced

The pain is usually only localized to the area of the joints, and may be on one side or both. No surprise need be caused by the fact that, although the pain may be specifically in one or other sacro-iliac joint, on manipulation there appear more adhesions in the opposite one. This is because they are so closely related in the overall body mechanism that an initial strain of one very frequently causes reaction in the other

Another condition that occurs in this area is *Lumbo-Sacral strain* This is quite different from the former, and

causes a pain across the middle of the back in the area illustrated, particularly when one bends backwards forcibly Very good exercises for this are described on page 66



Common sites of pain in the lower back

The third and most important condition that gets mixed up in this group is best known by the name of Sciatica Sciatica pain occurs along the route of the sciatic nerve, and may extend down the back and side of the thigh behind the knee, and down into the heel and soles of the feet I find in athletes that the cause is very often torn muscle or ad-

lesions deep to the sacro-iliac joint, and it can be relieved by manipulation of that joint in the same way as one does for sacro-iliac strain If the sciatica is due to pressure on the nerve more centrally, by a slipped disc, then distribution of the pain will be wider, and the treatment, which at first should be active, sometimes, as I have said before, requires surgical interference

There are those who hold the opinion that several months immobilization in a plaster jacket might settle the disc down and lead to no recurrence of the trouble, but if you are an active athlete you are very likely to set it off again in this way if you go on with your sport afterwards, and I therefore recommend the vigorous exercise routine If that makes matters worse, then there can be little question that you will have to have the disc operated on

Back muscles and cycling There has been much controversy as to whether one can develop a stronger back on a cycle with raised or dropped handlebars Figure 11 shows most conclusively which is the better for producing power from the back. With raised handlebars, the first two photographs show that the back is not in a correct position for action. Photographs 3 and 4 show that as the handlebars are lowered so the back muscles come more and more into play Equally, the photographs show that the abdominal muscles also are drawn in and used more with the lower bars

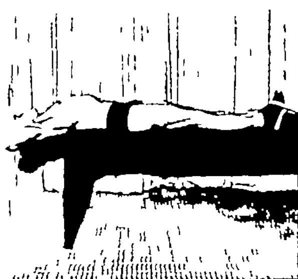
There is no shadow of doubt that the cyclist, for full efficiency requires to use the power of his back for driving him along This information may distress some parents who are concerned that youngsters should not ride with low handlebars but although one might suppose otherwise, statistics do not show that more accidents occur with dropped handlebars than raised ones One cannot ride a bicycle in a balanced fashion unless one keeps one's head continually raised and one's eyes looking ahead. A far

worse danger than dropped handlebars is the habit some youngsters have of carrying speedometers and being so intent on seeing what the speedometer is registering that they run a grave risk of hitting something For full efficiency, however, on a cycle, there is no doubt that a great deal more power can be developed with the dropped handlebars and as an exercise for both back and abdominal muscles there is no doubt which is the better

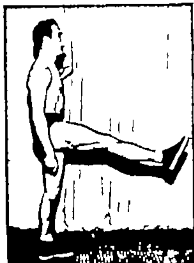
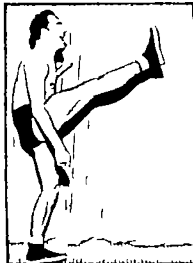
Manipulation of back. I am not describing this in detail because I do not believe it is a thing that should be done by anybody but qualified persons No back should be manipulated for a central pain or disability in any part of it before it has been X-rayed If the pain is in the region of the lumbar muscles, however, any stretch of those muscles putting them through a full range of movement, will probably relieve them. There is, however, one manipulation which can be done by trainers and which can lead to great relief

Manipulation of sacro-iliac joint The sacro-iliac joint may become painful owing to strain and the formation of adhesions in the region. If such adhesions have formed then they are best torn down by this very simple process Before doing the manipulation it is important to be sure that you are dealing with a sacro-iliac strain. The pain is localized over the dimple area on either side of the spine in the upper part of the buttocks Nowhere else, and certainly not more central (see illustration p 62)

Lie the patient on his back and then put him on his side with the upper leg over the side of the table. Now force the upper shoulder away from you at the same time as you apply pressure downwards over the upper hip The weight of the leg hanging over the table coupled with your pressure, will probably cause you to hear the adhesions tearing down in the joint. You can repeat the process with the



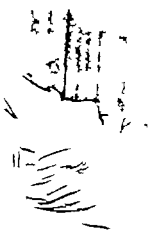

1 STRETCHING THE BACK AND ABDOMEN a useful toning-up exercise (p. 21)

2 STRETCHING THE THIGHS with full backward as well as forward stretch (p. 22)

3 TO REMOVE PARTICLES FROM THE EYE, roll up the lid with a matchstick (p. 64)



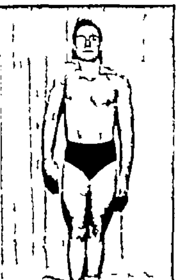
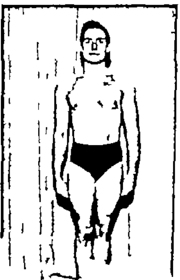
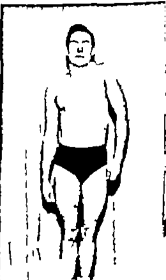


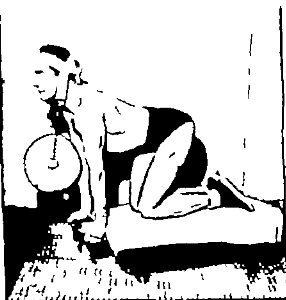
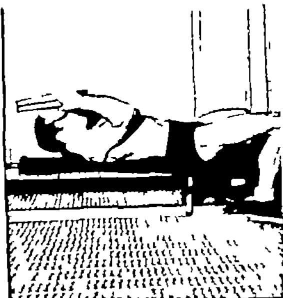
4 LOOSENING STIFF NECK MUSCLES (p. 54) Turn the patient's head sharply to the left, then to the right twist it to the left, to the right bend it back force it forwards.





5 ALTERNATE SHOULDER SHRUGGING to keep shoulder and neck supple (p. 56)

6 7 NECK EXERCISES lifting a weight by a pulling motion (*left*) and pushing (*right*)



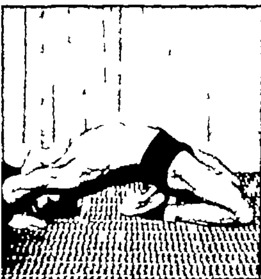

8 9 NECK EXERCISES the patient resists the pressure two methods are shown (p. 67)

10 LOW HANDLEBARS develop the back muscles, and also draw in the abdomen (p. 63)

FOR THE BACK AND ABDOMEN

The best general exercises for the back are very often the same as those for the abdomen. Figure 11 (*right* and *below*) shows an exercise that benefits both. Bend back from a kneeling position, touching the floor with head and hands, then try to raise the body from the floor on the hands and feet. Good balance is important for this exercise, which effectively stretches the abdominal muscles (see p. 65)

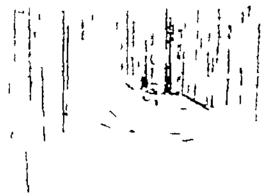


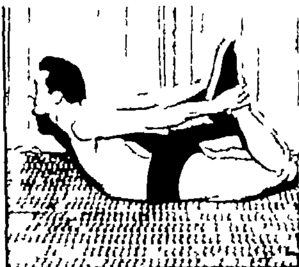




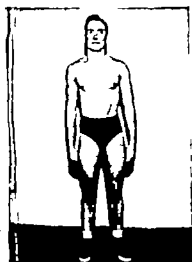
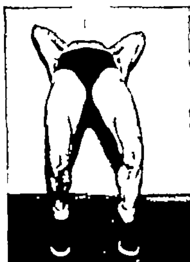
12 STRETCHING EXERCISE This is the reverse of Fig. 1: the hands grasp the strap, and the legs, overhanging the end of the table, are alternately raised and lowered (p. 65)





13 FOR THE ABDOMINAL MUSCLES from the first position, hold the ankles and pull


14 CLIMBING DOWN THE WALL care should be taken not to twist the trunk (p. 65)

15 FOR THE BACK You should be able to bend as far back as you can forward (p. 66)





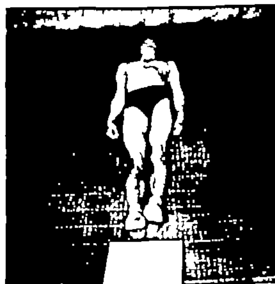




16 MANIPULATING THE SACRO ILIAC JOINT by pressure on the hip and shoulder

PAIN IN THE BACK
(SACRO ILIAC STRAIN)

Pain caused by sacro-iliac strain is localized over the dimple area on either side of the spine in the upper part of the buttocks Adhesions here can be broken down by the manipulation shown above applying pressure to the upper hip and shoulder (see p. 64) The twist thus imparted forces the joint free A special exercise for this strain is shown in Fig 17 to the *right* and *below* Lying flat on the floor draw up each leg at the hip alternately as rapidly as you can. There is little apparent movement, as can be seen from the three positions of the heels in relation to the paper (see p. 66)







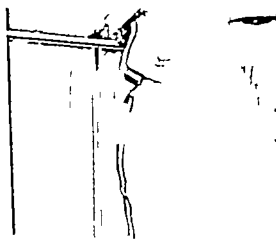


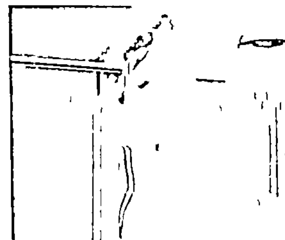


STRENGTH EXERCISES
FOR THE BACK AND ARMS

18 (*above* and *left*) overhead pulley A weight is suspended over a pulley and lifted by a direct downward pull on the bar It is best to kneel vertically under the pulley cable The hands may be spaced widely and over the bar which is pulled down to the shoulders, or close together and under the bar pulling it to the chest Breathe out when the bar is pulled down, and in as it goes up again to arm's length (see p 66)

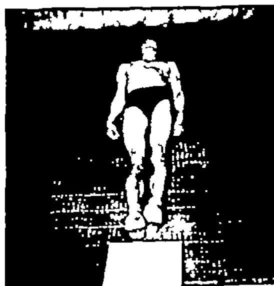
19 PULLUPS FROM A BAR with hand positions as above Weights are added as necessary







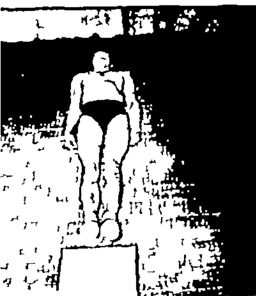
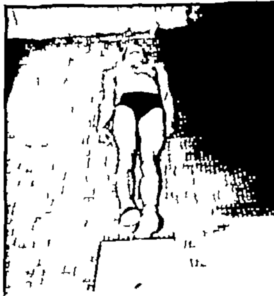

16 MANIPULATING THE SACRO ILIAC JOINT by pressure on the hip and shoulder

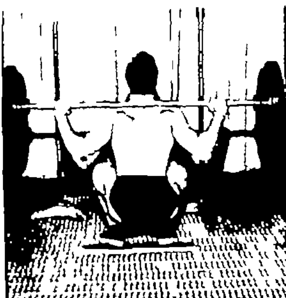


PAIN IN THE BACK

(SACRO ILIAC STRAIN)

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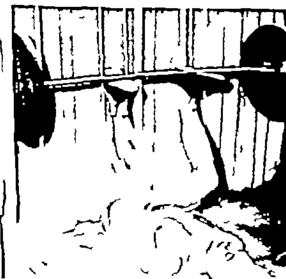









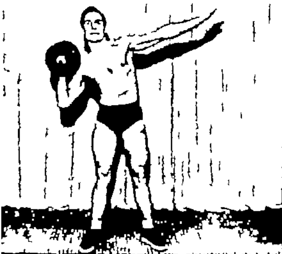




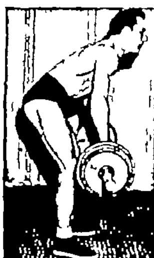
STRENGTH EXERCISES

FOR THE BACK AND LEGS

23 (*above*) This can be done from a stool, or squatting with the heels on a low block, or with one heel on the block and the other behind it. Try all variations till you find the most suitable one (see p. 68)
24 (*left*) Lift the bar with the legs only, keeping the hips on the floor. Shoes with heels should be worn (p. 68)

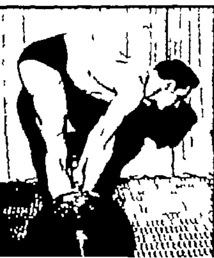
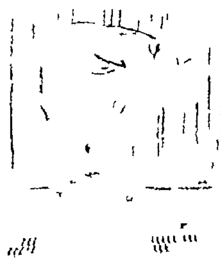


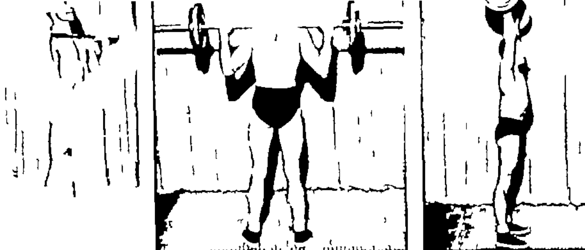

20 SIDE PRESS WITH DUMB BELL, with lateral sway to exercise the sides (p 67)


21 CLEAN AND JERK The bar is pulled to the chest, then thrust up to arm's length.

22. THE LOWER BACK DOES THE WORK in this barbell lift with legs straight (p 67)

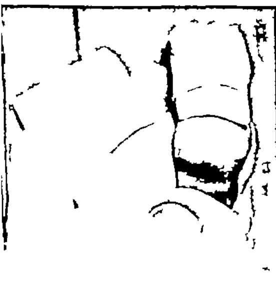



28. BARBELL PRESS from the chest or shoulders. Both are good for the shoulder muscles. This can be done sitting or standing and the hand spacing may be varied as shown.



PROTECTING BRUISED KNUCKLES

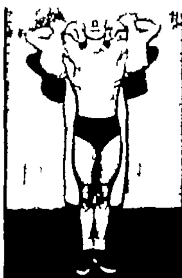
29 The knuckle of the middle finger metatarsal bone which is more prominent than the others, often gets bruised in boxing. The trouble will recur unless the damaged knuckle is protected from further knocks while the bruise is dispersing. The best method of protecting it is shown here (see also p. 84). Thick felt pads, thick enough to project beyond the injured knuckle even when under pressure are fixed on to the adjacent knuckles, and held in place by a bandage round the hand. The joint should on no account be immobilized give it exercise and massage right from the day of injury

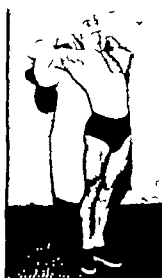


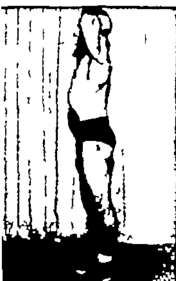


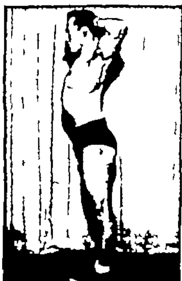
FOR STIFF SHOULDERS

25 From the starting position (*left*) the manipulator should suddenly force the patient's arms as far back as possible at the same time moving them sharply upwards, then down. This will free any minor adhesions in the joint (see p 76)











26 TO KEEP THE SHOULDERS SUPPLE force the elbows back and forwards (p 77)

27 STRENGTHENING THE SHOULDERS the palms face inwards throughout the press.

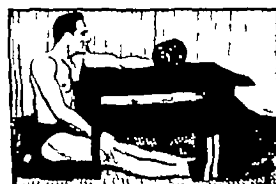




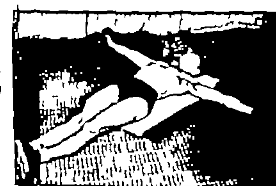





33 ARM EXERCISE the dumb-bells are lifted to the shoulder with a curling action.

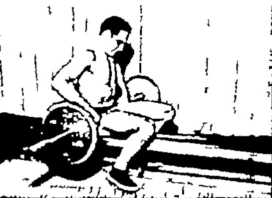



34 Table curl the shoulder is kept well down and the full weight lifted each time (p 93)

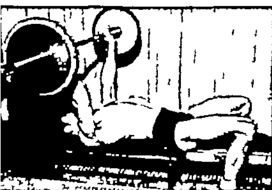


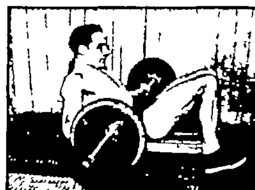

3 Dumb-bell pullovers weights pulled across the chest or lifted from the sides (*above*) or swung alternately up and down (*below*) 36 ABDOMINAL EXERCISE. See p 97



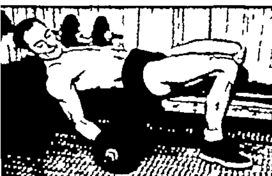



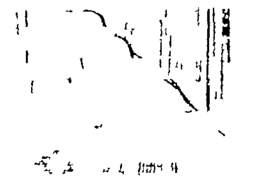






50 CHEST EXERCISE lift the barbell to the thighs lie down and shift it to the chest press up and lower repeatedly finally lower the bar to the abdomen and sit up (p. 92)





51 Bench press with dumb-bells (p. 92) 52. Incline press with dumb-bells. The two best positions are shown above (*right*) and below (*left*) The press should be vertical.








40. KNEES BENDING with knees well apart put them through a full range of movement.



KNEE AND ANKLE

41 Stand about a yard from the wall and try to force your foot through it, keeping the body upright and the leg straight. Lower and repeat

42. For this you need a heavy bed or table, standing about two feet from the ground. Try to lift it with the heel. Lower and repeat (see p. 111)





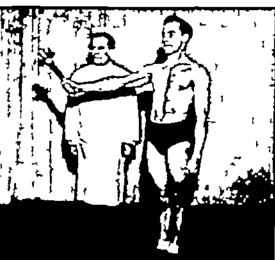

43 MANIPULATING THE ANKLE Let the patient lie relaxed first force the toes away from the ankle then firmly *up again* next turn the foot outwards then inwards (p. 123)





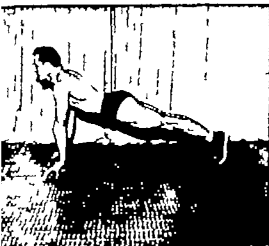


37 MANIPULATING THE ELBOW extend the forearm, keeping the wrist fully flexed




38 ELBOW EXERCISE the weight pulls the arm over helped perhaps, as here (p. 87)

39 FOR TONING UP THE FOREARM AND HAND press-ups on the fingertips (p. 88)




other leg, as shown in Figure 16 The process may be very painful but if done just by manual pressure, can do nothing but good.

EXERCISES FOR THE BACK

There is no need to separate the back into upper, middle and lower as far as the special exercises go The best general exercises for the back are very often the same as those for the abdomen

Fig 11 One exercise in this group is to kneel as shown in the photograph, bend back, arching your back and touching your head on the floor with your hands also on the floor as shown, then try straightening your legs and arms, arching your back even more This is a difficult exercise and must be done in complete balance. It is extremely effective, particularly in stretching the abdominal muscles

Another good exercise for the back and abdomen is the one described in Chapter 2 (Fig 1), and the reverse of it, which is as follows

Fig 12 Lie on your back, getting hold of a strap with your hands your seat should be about three inches from the end of the plinth with your legs hanging to the floor Raise your legs from the ground so that they touch the plinth above your head, repeating the exercise as many times as you can.

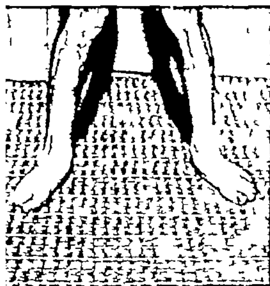
Fig 13 The next exercise is one in which you lie flat on your face with your arms down by your sides Raise the head and shoulders off the ground, stretching your hands out behind them, and at the same time raise your legs together straight off the ground Hold this position as long as you can and then grasp each ankle with the hands, keeping the knees together Now brace the feet away from the hands without leaving go and with your head and shoulders thrown well back. Hold this position as long as you can, and repeat.

Fig 14 The next exercise is to stand about a yard away

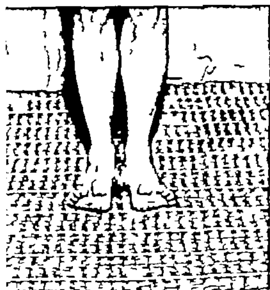
EXERCISING THE ANKLE

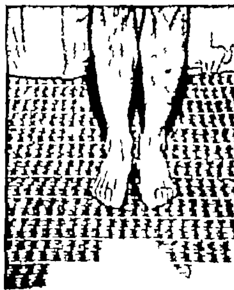
44 Looking straight ahead, walk along first on the outside edge of your feet, then on the inside next, walk on tiptoe finally walk with the toes splayed upwards and outwards, then with the toes clawed under Properly carried out, this exercise preserves the suppleness of the ankle joints, toes and insteps (see p. 123)











pulled to the shoulders, and the other in which the hands are touching and under the centre of the bar, which is pulled to the chest. The breathing rhythm is out when the bar is pulled down and in as it goes to arm s length

Fig 19 Pullups The same two variations as in the Pulley are best used here and the body is pulled up and down whilst suspended from a bar Weights can be attached to the body Both movements should be as full as possible and the lower body kept relaxed The breathing rhythm is the same as for the Pulley

Fig 20 Side press The start of the movement is similar to that of shot-putting From this position a combined arm press and lateral sway will extend the arm As soon as the arm is fully extended, the weight is returned to the starting position. The legs should be extended throughout but the sway might well be entirely lateral or slightly backward and well forwards Breathe in with the press

Fig 21 Clean and jerk without foot movement or squat From the illustrated starting position the bar is pulled vertically upwards to the chest. A short knee-bend followed by powerful leg extension will drive the bar upwards, whereupon the arms extend and finish the movement with the bar at arm s length overhead. Since it is an all-round movement, and depending on the poundage in use more or less, work can be purposely given to different parts of the body

STRENGTH EXERCISES FOR THE BACK AND LEGS

Fig 22 Dead lift from floor or raised base with legs straight The individual purpose of the exercise will determine the length of the movement. Generally speaking, the most advisable starting position of the back is as shown with the bar resting on a bench. The bar is pulled vertically upwards There is no need to lean back at all but it is best to raise the lower chest when the back is straight. The breathing rhythm is in as the bar is lifted and out as it is lowered

from a wall with your back to the wall and climb down it. You start by falling back to the wall with your hands and rising on your toes You will not be able to get far down the wall at first, but your aim is to get your hands and head down to the floor You should only go as far down as you can safely go without collapsing, and as far as you are sure you can climb back from. It is most important to keep the body completely symmetrical during this exercise any twisting of the trunk is dangerous and should be avoided The pictures show exactly how it should be done.

Fig 16 Another exercise is to stand with your feet slightly apart and bend backwards and forwards A really supple athlete should be able to bend as far back as he can forward and the aim is to develop such mobility If you remember that muscle is elastic tissue, then you will see how by gradually trying to stretch out your back muscles, you should be able to increase the range of movement in this exercise both forwards and backwards

Fig 17 Special exercise for sacro-iliac strain. It is very difficult to illustrate this exercise, as there is very little apparent movement, but what movement there is can be seen by noting the position of the heels against the white paper Lie flat on your back with your legs together and pull up each leg at the hip alternatively We call this exercise the scissors and it is extremely good for any sacro-iliac strain. Once you have got the knack of it, the faster you do it the better at all times keeping the legs absolutely flat on the ground The more you can make your back ache in the region of the sacro-iliac joint, the better

STRENGTH EXERCISES FOR THE BACK AND ARMS

Fig 18 Overhead pulley Best done kneeling vertically under the pulley cable The body should be kept vertical throughout the pull There are two good variations, one in which the hands are spaced wide and over the bar, which is

9

Shoulder Injuries

Damaged shoulders are the bugbear of cricketers, field-events men, and indeed almost all ball-game players The shoulder joint has a ligamentous covering, or capsule, all round it deep to the muscles and tendons, and this may become inflamed as a result of direct trauma or more frequently owing to sudden unaccustomed overstretching Common specific causes of this injury are flicking strains by bowlers in cricket and javelin throwers, but any form of jarring is liable to cause it. The injury causes varying degrees of limitation of movement of the arm owing to the pain. The important thing is to try and get the arm to a full range of movement at the shoulder as soon as possible, and in order to do this it is often necessary to obliterate the pain with injections of anaesthetic, because the pain is usually so severe as to make it quite impossible without.

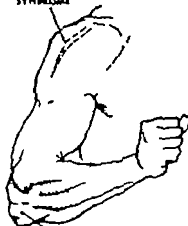
One of the principal reasons why this joint proves so difficult to treat is because it is very easy to compensate for loss of movement in the shoulder joint by moving the shoulder blade and one can, to a large extent, mask the fact that one is not moving the arm at the shoulder Anyone who has injured his shoulder will know this and be able to demonstrate the fact when raising the arms sideways He may be able to get the arms to an equal level but a mirror will show that the damaged shoulder is higher than the other one, because the scapula on this side is moving to spare the injured joint.

The head should be kept raised at the start of the movement.

Fig 23 Squatting with barbell The barbell is rested on the shoulders The longer the movement of the squat, generally speaking the better More often than not, however, it is advisable to shorten it. Much would depend on specific requirements The heels are often best supported on a 1" or 2" block. Sometimes it is best to squat on to a low bench or stool, sometimes on to the block that is to say not to rest momentarily the full weight of the body and bar on the support between repetitions Sometimes it is best to support one heel on a block and place the other foot slightly behind keeping on the toes of this foot, and to keep this foot position in the squat. It is best to try all variations and also to work with varying toe positions The breathing rhythm is out during the squat and in as the legs are extended. It is often necessary to take one or two additional breaths between repetitions

Fig 24 Leg press Can be conveniently done on a machine. It is best done without, the bar being balanced on the insteps (shoes with heels) The back is flat on the floor and the movement long provided the hips do not leave the floor too much. The breathing rhythm is in as the bar is pressed and out as it is lowered. A double breath to each movement might well be required

Supraspinatus Syndrome Pain in the region of the tendon of the supraspinatus muscle as it passes over the top of the shoulder joint is a very common cause of trouble The tendon may be stretched and strained and then a toothachy pain arises in the region, often spreading down into the arm along its outer border It can be a most persistent pain, but can frequently be relieved in the same way as the capsulitis of the joint. It is another condition for which injections are frequently given. I do not recommend electrical or heat treatment for either of these conditions



Acromio-clavicular Subluxation (partial dislocation) This is an injury most commonly sustained by rugger and ice-hockey players owing to a direct blow on the shoulder region. The blow is usually a heavy but glancing one, hitting the tip of the shoulder so that the strain all comes on the joint between the collar bone and the acromion process of the shoulder blade The joint becomes swollen and painful and often makes it impossible to continue playing The swelling is quite characteristic, and localized to a

These injuries would be far less troublesome if the sufferer would try, immediately after injury, to get back the full range of movement in the shoulder joint. A bowler cannot, of course, mask the fact that he cannot bowl over-arm with such an injury, and it is vitally important to him to get the full movement back at once If the condition is allowed to become chronic, it is almost inevitable that an operation becomes necessary in order to remove part of the capsule but in my personal experience this is very seldom necessary if the patient really perseveres with his exercises

These should be of such a type that they force the arm through a full range of movements and prevent any muscle wasting The use of Indian clubs is particularly recommended for this purpose, but far better than not doing any exercises because of not having Indian clubs, is a daily routine of arm swinging and raising combined with astride jumping

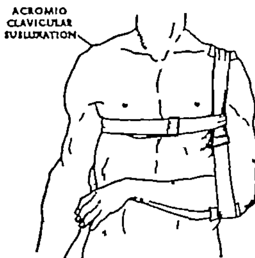
Another good exercise for an injury of the shoulder joint is to swing on the bad arm with the full weight of the body the hand gripping the top of a door Try to force the arm through the painful movements

To show how effective this treatment can be I recall how on the morning of a big inter-counties cricket match I was asked to see the captain of one side because he had sustained a very severe injury to his shoulder I said I would see him on condition that they let him play after treatment. I injected the joint and sent him on his way Having put the arm through a full range of movements he went straight in to bat and scored a century with ease, and he never had any further serious trouble with it. That suggests that it cannot have done him anything but good. It might be thought that this treatment would entail the risk of causing a flare-up in the condition, but in my experience it causes nothing but relief from the pain and the limitation of movement.

for this one, and I can best illustrate it by a specific example Recently one of our leading women bicycle racers crashed while road-racing and fell forward on to her face and chest. Her right shoulder took most of the force and there was considerable swelling over it. The diagnosis of acromio-clavicular subluxation was made, and her arm was strapped as I have described in the illustration She was told to keep it immobilized for five to six weeks In actual fact she had not damaged this joint at all, though the swelling and bruising might have temporarily made it appear so She was taken out of the strapping on the fourth day in order to adjust it, and it was found that the swelling had gone. In fact she made a complete recovery within a week. Realizing how important it is to limit inactivity to a minimum, one can see how unnecessarily the effects of the injury would have been aggravated, had she had that strapping support on any longer for a fit athletic woman like that would have taken weeks longer to recover her muscle tone than to recover from the actual injury It is very rare for such a direct blow to subluxate the joint, and it was unlikely in any case that she had done so As I have said before, such an injury is usually due to a violent, glancing blow, not to a direct one.

Broken collar-bones In the world of sport, I have found a singular lack of appreciation of the dangers of this particular type of injury If ever there is any suspicion that a collar bone has been broken first-aiders and others should be made to understand that even slight movement of the arms can increase the damage done very considerably, and such injuries *always* require hospital treatment because the extent of the damage cannot be ascertained except by X-ray Fragments of bone may have injured surrounding tissues, including the lungs, and only hospital staff have the facilities for discovering what that damage may be I well remember seeing a track cyclist crash at about 40

small area over the joint as illustrated As with almost any joint in the body effusion of a small amount of fluid can be dispersed by exercise, but if in this case there is severe swelling, it is important to immobilize the shoulder and arm for a period of a week until the swelling has settled down. Any risk of damaging it further within that week should be avoided at all costs, because recurrence of this condition can lead to a most unpleasant and persistent pain which usually requires operation to fix the joint, so that further movement cannot take place between the bones Such an operation is bound to affect the patient's balance and therefore his efficiency as a player

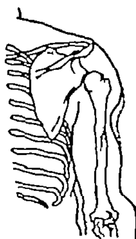


Area of swelling in acromio-clavicular subluxation, with strapping for this injury shown on opposite arm

The injury tends to cause the shoulder to drop and the aim of the immobilization treatment is to take the weight of the arm off the shoulder so that it is symmetrical with the other side The illustration shows the form of strapping recommended for this injury and it will be seen that a pad is put over the joint to prevent any friction that might cause irritation to it.

There is a type of injury which is sometimes mistaken

duced at once, but it must only be done by a doctor It is important, however, that trainers and masseurs should know what this dislocation looks like, and the characteristic deformity caused by this injury is shown in the illustration If there is any risk of any bones having been broken, the case must be taken to hospital at once, but if a doctor can be got to the spot where the injury has taken place, and can reduce it immediately, the patient will make a much speedier recovery than he would have done even if there had only been the delay of getting him into hospital Careful movement should be instituted as soon as the reduction has taken place.



Dislocation of shoulder, showing characteristic deformity

Torn muscles Torn muscles in the area of the shoulder should all be treated by the active exercise routine recommended in Chapter 1

Falls causing deep grazes In two sports, cycling and athletics I have seen very nasty injuries suffered by athletes falling on their faces and shoulders on the gravel tracks These so-called burns can be very deep and very unpleasant because almost invariably, a good deal of grit gets into the injury Much trouble can be saved however, if penicillin or sulphanilamide tulle-gras is applied This is

miles an hour He was knocked out and sustained multiple abrasions Although I went straight over to see him and tried to prevent any harm being done to him until it was ascertained what injuries he had sustained, I was greeted by a first-aider holding the cyclist s right arm in the air to show that it was not injured and that he had not broken his collar bone The first-aider had failed to observe that there was a piece of the collar bone sticking right through the skin in the man s neck, and because he was unconscious no one had appreciated the severity of his injuries If that spike of broken collar bone had gone inwards rather than outwards through the skin, the raising of his arm might well have proved fatal to the injured man.

If people were more aware of the need to reduce *any* movement to a minimum after such an accident, there would be far fewer casualties from secondary shock or complications I am reminded of the occasion when an international sprinter, who was playing rugger, fell and broke his leg Because he was a very well-known person, he was immediately surrounded by all sorts of helpers but so conscious was he of the vital importance of minimizing any movement of the broken bones that he refused to allow anyone, even ambulance men or police, to touch him except according to his explicit instructions He would not allow himself to be moved one inch until splints had been placed round the injured limb, so that he could be lifted with the leg in exactly the position in which he had fallen, and that is how he arrived in hospital. When the surgeon saw him, he said he had never seen a broken leg with so little damage to the soft tissues (muscles etc.) and I was not surprised to hear afterwards that the bones knitted up so well, and the surrounding muscles were so little affected, that he got back to international-class running

Dislocation of the shoulder This is a common injury of sport A lot of trouble will be saved if the dislocation can be re-

ful, but the best are those that can be done by rhythmical over-arm swinging with Indian clubs Another exercise which helps to get past the painful limit of upward movement of the arm is swinging on a bar with the injured arm or, if a bar is not available, swinging on a door, just making the arm support the body weight. This will help to free the shoulder, but if in addition an attempt is made to bend the arm and raise the body, that is better still. It may be difficult to raise the arm to reach the top of the door, if not practically impossible, but it will help if you try to climb up the door with the fingers of the injured arm, helping it up with the other hand It does not matter how slowly you go once you are there you will find you can grip with your hand and then you should try and make the arm support your weight. All such efforts will help to loosen the shoulder

Another shoulder exercise (Fig 26) is to place the hands behind the neck with the elbows bent and first force the arms forwards with the elbows pointing forwards, and then as far back as possible repeating the exercise a number of times

STRENGTH EXERCISES FOR THE SHOULDERS AND ARMS

Fig 27 The dumb-bell press sitting The weight should be pulled to the shoulder and then, sitting firmly on the stool with a straight back and the dumb-bells held well to the side with the palms facing each other throughout, the weight should be pressed to arm s length. It is not an easy movement but is the very best shoulder exercise

Fig 28 The barbell presses from the chest or from the shoulder This can be done sitting or standing The hands should be spaced from shoulder width to medium wide or in the case of the press from the shoulders, to wide Best to breathe in as the bar goes to arm s length, and out as it is lowered The body weight in the case of the standing press should be evenly distributed over the whole of both feet.

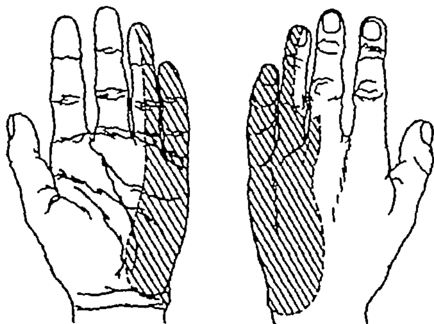
gauze soaked in vaseline and the antiseptic, and if spread on the wound several layers thick immediately after injury and left on for three or four days draws much of the grit and dirt out of the injury on to the gauze Other forms of treatment tend to leave the dirt in, and unless you get it out at once it may cause lasting disfigurement.

Manipulation of shoulder Effective manipulation of the neck, elbow, back and ankle can be carried out by club masseurs, but the shoulder often proves to be much more difficult usually an effective manipulation can only be achieved under an anaesthetic. However, minor adhesions of the shoulder can be broken down by manipulation without anaesthetic. This takes two forms First, stand the patient with his back to you and tell him to put his hands behind his neck. You stand behind him and put both your hands in front of his arms gripping his forearms as shown in Figure 25 Suddenly force his arms back as far as you can, at the same time lifting them both upwards and then sharply downwards attempting to get any movement you can out of them while he keeps his hands behind his neck. This will loosen the shoulders considerably The other manipulation is more for the shoulder joint itself Take the arm in your hand and raise it sideways If there has been an injury to the shoulder joint, the patient may find it difficult to raise it himself to a horizontal position and you should try and force it higher for him. Your action may prove very painful, but you won t do it any damage and will merely be tearing adhesions down.

EXERCISES

As in the case of all joints your aim is to put the limb concerned through a full range of movement and any variation of these in the case of the shoulder will prove beneficial. Astride jumping with arms raising or any of the numerous exercises taught to most of us in school will prove help-

strap such an injury, and no good is done by rubbing in lotions or applying heat the latter only causes further effusion of fluid and is liable to make matters worse The correct procedure is to exercise the forearm and wrist as much as possible Any risk of a sudden flicking or jarring movement of the arm should, however, be avoided at all costs The best way of exercising the affected muscles is by performing the special exercises described at the end of this chapter Only rarely does it become necessary to inject the localized area of pain with proctocaine Any increase in the swelling if there is any, should be dealt with by massaging the arm in elevation



Area of pain or palsy in ulnar neuritis

When the pain of tennis elbow is on the inside of the arm, it may well be mistaken for an ulnar neuritis It is very important to differentiate between these two conditions, because if you are suffering from a neuritis, it is absolutely essential to rest the limb This condition how-

10

Elbow, Wrist and Hand Injuries

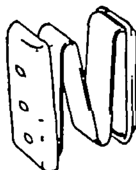
Under this heading comes much the largest group of common sports injuries The very slightest strain to an upper limb will incapacitate a player and wrong treatment can cause great delay in getting him back to action. Of the three areas we include the elbow gives the most trouble. Whether the injury itself be serious or not, pain in this joint upsets the player and puts him right off his stroke.

Tennis elbow This is an injury common to tennis, golf, javelin-throwing and all games in which racquets are used It is characterized by a pain either on the inside or outside of the elbow joint, more commonly on the inner side (see illustration on p 71) It causes a weakening of the hand grip and an aching pain in the forearm which may prove catastrophic to one s performance Although I have read recently in a medical journal that it is a most persistent complaint and difficult to clear up it is my own experience that if it is correctly treated recovery follows within two or three weeks

First of all, what causes it? It is usually due to a tearing-off of the bone-covering and the attachment of the muscles to it on the humerus above the elbow and the pain can be localized on pressure to the ridge of bone just above the elbow The knobs on either side of the elbow joint may be affected, but the tenderness there is usually due to involvement of the bone by the inflammatory fluid spreading from above On general principles it is most important never to

against the loss of muscular condition that it may cause The better the athlete, the more fatal it is to him to allow any gross deterioration in muscle tone Of course, it is essential not to err the other way so that a broken bone is not immobilized long enough, for if non-union once occurs it can become the worst problem of the lot.

Sprained wrist This is a common injury amongst all racquet players, among rugger players because of handing-off, and among canoeists from turning the paddle when using a feathered paddle It is an injury that can occur in almost any sport. It does not matter what the cause has been the treatment is the same as it would be for a sprained joint anywhere in the body These things are so often wrongly treated that I must first point out the *don ts* Don t strap them up and don t rest them don t treat them with heat, electricity or massage. Do put them through graded exercises, gradually increasing the amount of work. If you cause any reactionary swelling, then elevate the limb for half an hour and try again



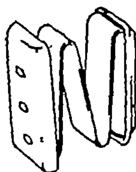
Whether the sprain is chronic or recent an excellent plan is to have a squash ball or a spring grip such as the one illustrated and keep squeezing it This exercises the muscles of the forearm and hand, moving the leaders and thus increasing the circulation through the joint, dispersing any fluid and generally loosening it up

ever, is much rarer in athletes than tennis elbow, and as it is very simple to tell the difference there should never be any doubt as to which is which. Ulnar neuritis is caused by exactly the same things as tennis elbow, although it has to be a much more severe stretch to damage the nerve than that required to damage the muscles It is characterized by pain over the shaded part of the hand in the illustration below the affected nerve only supplies half the third finger and the whole of the fourth. It sometimes causes these fingers to claw and may cause not only pain but weakness and wasting of muscles The pain of tennis elbow may spread through the forearm and hand but usually does not pick out any particular fingers The only way to treat the neuritis is by resting the limb for two or three weeks any application of massage or heat or electrical treatment will make it worse.

Cracked and broken bones A common injury in the region of the elbow joint is the knocking-off of little bits of the bones, particularly by tennis players The head of the radius or the tip of the knob of the elbow joint at the back or sides may all receive blows which break off these small fragments *The wisest thing to do if you suspect such an* injury is to get it X-rayed. It is important to know whether the bone is broken or not if it is only a strain vigorous exercise is good for it, but if the bone is broken moderate movement only should be permitted This will enable the patient to be back in training within a very short time because movement of the muscles round a cracked bone, or round a fracture with no displacement, speeds up the knitting of the bone and gets it back to normal all the more quickly because of the improved circulation through the area. In many hospitals there is a tendency to put these injuries into plaster of paris or immobilize them in other ways for much too long when the patient is an athlete, the duration of the immobilization should always be weighed

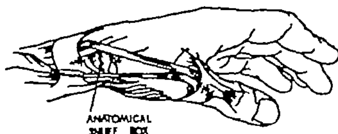
against the loss of muscular condition that it may cause The better the athlete, the more fatal it is to him to allow any gross deterioration in muscle tone Of course, it is essential not to err the other way so that a broken bone is not immobilized long enough, for if non-union once occurs, it can become the worst problem of the lot

Sprained wrist This is a common injury amongst all racquet players, among rugger players because of handing-off, and among canoeists from turning the paddle when using a feathered paddle It is an injury that can occur in almost any sport. It does not matter what the cause has been the treatment is the same as it would be for a sprained joint anywhere in the body These things are so often wrongly treated that I must first point out the *don ts* Don t strap them up and don t rest them don t treat them with heat, electricity or massage Do put them through graded exercises, gradually increasing the amount of work. If you cause any reactionary swelling, then elevate the limb for half an hour and try again



Whether the sprain is chronic or recent, an excellent plan is to have a squash ball or a spring grip such as the one illustrated and keep squeezing it This exercises the muscles of the forearm and hand, moving the leaders and thus increasing the circulation through the joint, dispersing any fluid and generally loosening it up

Broken bones The bones in this region also may become chipped as in the elbow, and only X-ray will confirm such damage. Hospital treatment and advice is essential, though again the period of immobilization should be made as short as possible

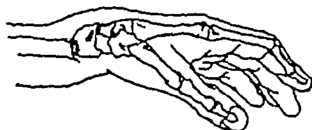


Site of characteristic pain in scaphoid fracture of the wrist

Scaphoid fracture There is a small bone in the hand called the scaphoid and this frequently gets broken in games like ice hockey in which direct trauma may occur The danger of breaking this bone is that it has a very poor circulation and is most difficult to treat as a result, because the two parts will not join together again, or at least they do so much less willingly than most bones do This injury is characterized by pain in a localized area on the back of the hand at the base of the thumb between the tendons of the thumb in what is known as the anatomical snuff box. If you sustain this injury it is essential that it should be immobilized in plaster of paris for at least twelve weeks, and during that period check X-rays should be taken to see that union is taking place In the event of non-union occurring, it may be necessary to have the two bits of bone wired together It should be impossible to mistake this injury for a sprained wrist and no one need worry that because they have sustained a wrist injury it will prove to be this somewhat alarming and severe one

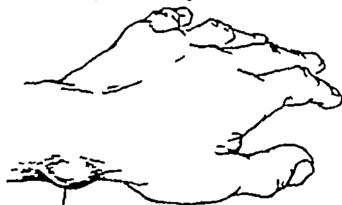
Colles fracture A common accident in sport is for the wrist to be broken by a sudden fall on the outstretched hand Both bones snap about an inch or less proximal to

the wrist, and the deformity it causes to the wrist and hand is absolutely characteristic. It is called the dinner-fork deformity, and is illustrated below If such an



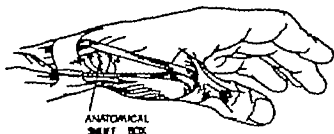
Colles fracture of the radius showing typical dinner fork deformity

accident occurs, the forearm and hand should immediately be roughly splinted, without any attempt to straighten the bones, and the victim taken to hospital at once Such a fracture can only be dealt with under an anaesthetic, and usually requires to be put into plaster of paris for about six weeks Sports in which this accident may occur include ice-hockey, skating and dancing



Stenosing Vaginitis This is a condition that also occurs on the back of the hand at the base of the thumb The

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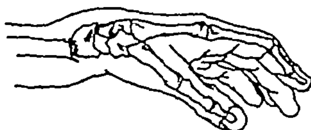


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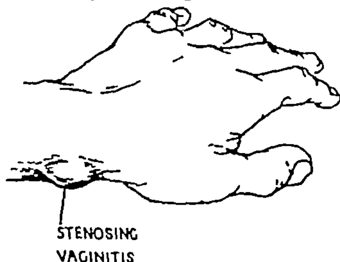
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covering of the leaders to the thumb becomes thickened and painful, the pain running into the forearm. It may be caused by exercising the thumb in an unaccustomed fashion, and is not so much associated with sport as with certain domestic occupations such as clipping hedges, piano-playing and washing out clothes It is, in fact, known as the washerwomen s complaint, but as it often occurs in active athletes too it is important to get it properly treated. Physiotherapy usually proves useless and hospital treatment is necessary, it is a very minor operation to have the sheath nicked with a knife, which frees the tendon and relieves the symptoms

Sprained thumb This is another very common injury and again should never be immobilized It is a very great temptation to apply a wonderful-looking piece of strapping, but all this can do is reduce the free circulation through the area and cause added stiffness. It is much better to exercise the thumb all you can, here again it is a good idea to keep a squash ball or spring hand grip (see page 81) in your pocket and make a habit of squeezing it. If you fence, or play tennis or squash, and want to continue to play, you cannot do your thumb any harm, but if you strap it up in order to gain added support, you are merely giving yourself a false sense of security and by doing so are trying to speed up recovery faster than Nature is prepared to go—always a bad principle

Bruised knuckles This injury is common among boxers and can be a source of endless trouble It occurs most often in the knuckle of the metatarsal bone of the second (middle) finger because this bone is more protuberant than the others Once bruising has occurred the aim must be to prevent any re-bruising, and this is not easy if the patient continues his training It should be remembered that the bruise whether visible or invisible, is bound to persist for at least four or five weeks, and every care should be

taken to prevent recurrence of the trouble for at least that period of time. Boxing may be continued, but only wearing special pads in other words, no competitive boxing for six weeks

These pads are of felt and are applied to the other knuckles so that they can take any pressure that might be applied to the hand Figure 29 shows the principle It is no use having felt that is only thick enough to protrude beyond the damaged knuckle when there is no pressure It must be so thick that even when pressure occurs it still protrudes more than the damaged knuckle Right from the day of injury, the joint should be moved and exercised both actively and passively as much as possible The bruise will sit there for months if any form of immobilization is practised, as of course it would anywhere else in the body

The brilliant young boxer Sammy McCarthy was under treatment for eighteen months with this type of injury and the trouble was not finally put right until due attention was given to avoiding further damage to his knuckles at all costs

Trigger finger Forcibly stubbing the fingers may cause tearing of the extensor tendon from the bone at its insertion on the back of the finger, leading to the end bone forming a mallet deformity which gets caught up on everything It is no use hoping that this injury will mend itself, nor will physiotherapy help, it is necessary to extend the tip of the finger and fix it in plaster of paris for several weeks until the extensor tendon joins up to the bond again. Fortunately so little plaster is required that it is possible to continue one s sporting activities, though it would be unfair to use even this amount of plaster as a weapon against one s opponents!

Dislocation of fingers and thumbs This is such a common injury especially in cricket and amongst wicket-keepers in particular, and so often the athlete likes to ignore the injury and deal with it himself, that it needs particular

mention. It is quite easy to get someone to give the digit a strong pull, when reduction of the bones will occur If you can do this yourself, well and good, but the important thing is to get it moving as soon as possible and to exercise it all you can without any delay Don t strap it up and don t splint it, but do get it moving at once If you have been unwise enough to allow the finger to remain dislocated for some time you face the fact that it will probably be necessary to have an operation on it to reduce it, and even in these cases movement is essential after the operation. To ignore the injury altogether is very stupid indeed, because such a joint, if not properly reduced, is almost bound to develop arthritic changes

Teno-synovitis of wrist and hand Inflammation of tendon sheaths may occur as a result of strain in this area, just as in any area, and is best treated by radiant heat and massage or electrical treatment. It is important, however, to keep the limb moving and not to immobilize it while treatment is being carried out. The risk of over-exercising it is very remote and most people tend to err the other way and not exercise it enough. *Nothing is to be gained by* strapping

Blisters of the palm of the hand and the fingers commonly occur amongst racquet players cricketers (bowlers and wicket-keepers) oarsmen and canoeists Spin bowlers get them between the fingers as a result of the friction and they can become a chronic complaint. However, if steps are taken, as for blisters in the sole of the foot to harden the skin of that area, then the risk of getting them can be reduced to a minimum. Once blisters have formed it is important *to remove all dead skin and open them immediately* Treatment is described under foot blisters (p 116)

Infections of nails and fingers Paronychia Pulp infections Infections of the nail beds and tips of the fingers may be associated with sports activity and these are things which

must be very carefully dealt with It is best to have the finger lanced as early as possible and treated under expert supervision Any carelessness about these minor things reflects itself in one's general fitness

Pins-and-needles in hand This is a very common complaint amongst cyclists after a long-distance ride It is due to the habit of putting so much pressure on the handlebars that circulation is obstructed The trouble can be cured by altering your style and making sure of two things firstly, that you do not put pressure on the hand for any prolonged period of time, and secondly, that you keep the wrist straight and not so that the hand is either extended or flexed on it. If you remember that this is purely a circulatory complaint, you will see how to cure it Another less common cause of this numbness and pins-and-needles is a slouching seat, which causes the first rib or the collar bone to press on nerves and arteries in the neck, causing a similar obstruction to circulation This can be cured by correcting your style

Manipulation of the elbow This is necessary if there is any limitation of movement at the elbow and where the pain of tennis elbow has become chronic owing to the formation of adhesions

Hold the injured elbow in the left hand as shown in Figure 37 and bend the hand and the wrist so that it is fully flexed then sharply extend the elbow, keeping the wrist fully flexed as it was at the start. This causes a full stretch of the muscles concerned and will tear down any adhesions if they are present.

SPECIAL EXERCISES

With these exercises the aim is to restore power in the forearm, wrist and hand. Get a tennis racquet or a weight such as is shown in Figure 38, and turn the arm outwards, letting the weight of the racquet pull it further over than it

would naturally go of its own volition. Someone can even help to force it back, as shown. Repeated pronation and supernation of the forearm with such a weight is an excellent toning-up exercise.

Another exercise is to get an ordinary spring hand grip (p 81) and keep it in your pocket, gripping it now and then at odd moments A little practice with this spring grip – which can be acquired from any sports shop – will lead to an amazing recovery of power

Among other simple exercises for toning up the forearm and hand is press-ups on the points of the fingers as shown in Figure 39 Although at first it may seem very difficult, after a little practice you will soon find it as easy as an ordinary press-up

STRENGTH TRAINING EXERCISES

As the special strength training exercises for the arms cannot be separated from the other parts of the anatomy, they are described under Back Shoulders and Chest.

11

Chest Injuries

Injuries to the chest are not common in sport, and would only occur in serious accidents, except for the following

Inter-Costal Muscle Pain. As a result of a twisting or wrenching movement of the chest wall it is quite easy to tear the fibres of the muscles between the ribs, and these can prove very painful I do not recommend any form of strapping as that tends to limit the movement of the muscles and prevents their speedy recovery Like muscles anywhere else in the body, they should be exercised vigorously, and the best way of doing this is by deep breathing exercises Any immobilization will only tend to make them remain painful all the longer

Cracked ribs Direct trauma can, of course, produce cracked or broken ribs, though the latter is usually due to crushing and is usually accompanied by severe shock. If either a fracture or crack is suspected then immediate hospital treatment should be sought. If, however, only a crack is found or a break with minor displacement, it is far better to try to get back full movement than to resort to immobilization. Even if you have only cracked the rib it is liable to be very painful, but there is no risk whatever that a cracked rib will separate and pierce the lung In the rare cases when lung tissue has been pierced by a broken rib it has occurred instantaneously The pain that such an accident causes is more than sufficient to protect the individual

against later or further injury The pain of a cracked rib is also sufficient for older people to require immobilization, but for a fit and active athlete it is far better to continue training particularly deep breathing by improving the circulation through the area, union of the bone occurs all the quicker If there has been any gross displacement of bone, of course it is a very different matter, and requires the most expert surgical treatment.

Painful breathing A very common cause of indisposition at the beginning of the season is painful breathing It occurs in all sorts of athletic activity and is usually due to taking unaccustomed exercise Most human beings only use about two-thirds of their lung tissue. If you suddenly go out for a five-mile run after a longish spell of inactivity, it is not surprising that you feel pain. It is simply due to the fact that you have stretched tissue that has not been lately accustomed to such stretching You have probably filled with oxygen lung tissue that has been without oxygen for some time, and naturally it reacts accordingly It is similar to the feeling of smarting and tightness in the nostrils and throat when you go out of a warm room into the icy cold If this part of your anatomy which is being constantly used for breathing reacts in such a way, it is hardly surprising that the deepest parts of the lungs react painfully on sudden exposure to air After the exertion ceases, you are liable to develop a dry very tickly cough. This is merely due to the irritation, and should be ignored I have often heard of people imagining that they have developed some serious disease, or strained themselves because of this coughing but it is very common indeed and the explanation is as simple as that. It is a good warning that you are not as fit as you ought to be When you are a hundred per cent fit you must automatically be using and accustomed to using all the lung tissue that you have got. Breathing is one of the most essential things for true efficiency and

yet many athletes are poor breathers In training athletes, I always concentrate on their lungs before I start specializing on any particular muscle development

Spitting blood It is not at all uncommon, in view of the fact that competitive divers may dive from a great height and at great speed, that afterwards they cough up small specks of blood, denoting that they have damaged lung tissue. Although it may seem rather alarming, there is no incident on record of any serious damage having been done in this way Presumably the shock of hitting the water sometimes reacts on the lung tissue, bruising it slightly, so that minute traces of blood get into the mouth

If such bruising has occurred, it is best to be careful for a time and perhaps to do some deep-breathing exercises, to increase the circulation through the lungs, and thus disperse the bruise in the minimal amount of time It would be quite wrong to advise rest, because all that that could do would be to make the bruise sit there a little bit longer Bearing in mind the principle of dispersing bruises anywhere in the body, the wisest course is to increase the circulation by vigorous expansion of the lungs The best exercise is to try to burst a football bladder Attach an ebony cigarette holder to the mouthpiece of the bladder don t try the exercise with your lips directly in contact with the bladder mouthpiece or you will make them very sore Breathe in through your nose, and out into the bladder By forcing air into the bladder, which puts up a resistance, air is forced into parts of the lungs which are not normally used Take long, deep breaths and not short, shallow ones, or you will make yourself dizzy because you tend to rebreathe your own air This is also a good exercise to do after the acute stage of pneumonia, when you are out of hospital However, it should not be attempted without a doctor s permission. It will lead to a re-expansion of the collapsed lung tissue much quicker than any other exercise will

STRENGTH EXERCISES FOR THE CHEST AND ARMS

Fig 30 Bench press with barbell The bar can be positioned on the chest prior to the press as follows it is first lifted in the standing position on to the top of the thighs with the performer sitting on the bench. He then lies back on the bench lifting the bar on to his chest. The press should be performed with varied hand spacing, breathing in as the bar goes to arm s length and out as it is lowered. At the end, lower the bar to the abdomen, putting the feet under the sides of the bench and coming to your feet by continuing the sit-up action and by simultaneously pulling with the legs

Fig 31 Bench press with dumb-bells The weights can be positioned at the chest one at a time by a shortened curling action as shown. Should they be too heavy they can be positioned in much the same way as the barbell. The two best pressing movements are with the palms facing together, closing the weights together as the arms extend and with the weights held wide to the side with the palms facing towards the feet, twisting the weights as the arms extend so that the weights close together again with the palms facing The breathing rhythm is, again quietly in as the weights are pressed and out as they are lowered.

Fig 32 Incline press with dumb-bells The weights can be positioned at the chest by arm and back action from their starting position on the floor on either side of the feet. The two best pressing actions are the same as on the horizontal bench and the breathing rhythm is the same. The weights are pressed vertically

Fig 33 Incline curl with dumb-bells The arm curling action is shown clearly in the photographs There should be no movement in the shoulder joint until the flexion of the upper arms is nearly complete The head is best kept slightly raised off the bench The breathing rhythm is in

as the weights are curled and out as they are lowered The palms can be kept uppermost throughout or they can face together at the start of the movement and finish uppermost. The latter movement will ensure full action for the biceps muscle.

Fig 34 Table curl The body should be positioned so that the arm is at right angles when fully extended and flush with the table. The weight is then curled until the forearm is at right angles to the table. The shoulder joint should be kept well down during the curling action so that the armpit is in constant contact with the table The full weight should be lifted from the table for each repetition, that is to say there should be no rebound

Fig 35 Dumb-bell pullovers The arms should be kept rigidly straight and the wrists slightly turned inwards, and the body is flat on the floor In the first variation the weights are kept at right angles to the body and pulled across the chest until they touch. In the second the weights are lifted from the thighs until they touch (palms facing) over the chest. In the third variation the position of the dumb-bells (as shown) is interchanged and in order to effect this the weights are twisted as they are pulled

In all movements the full weight (*i.e* no rebound) should be lifted for each repetition. The palms are facing upward at the start of all movements It is usually best to breathe in both as the weights are raised and as they are lowered but this double breath for each movement would depend on the rate of the exercise.

12

Abdominal Injuries

The most significant thing about the abdomen is that it is as a rule the most neglected part of an athlete's anatomy Most athletes take no end of trouble to tune up their legs and arms but grossly neglect their abdominal muscles, yet these are very largely responsible not only for a correct balance but also for an ordered and efficient digestion. If the abdominal wall is lax, then the abdominal viscera cannot possibly be as efficient as they should be It is necessary to keep the lateral muscles of the abdomen tuned up too These are the external, internal and transverse obliques and the quadratus lumborum, and the special exercises for them are described under the exercise group in this section.

Torn fibres of the rectus abdominis This muscle is very often torn, particularly in rugger, and such a tear can be very painful indeed It usually tears off from its origin at the sternum or breastbone it may tear at its insertion to the pelvis and then its pain is often mistaken for some internal trouble It is quite easy however to differentiate, because if you lie flat on your back and raise your legs or your trunk – depending on whether the muscle is torn at its upper or lower end – then you will find either that you cannot raise your legs or trunk or that the raising of them is increasingly painful The treatment for this injury is the same as for anywhere else in the body and if you really stretch out the muscles with the exercises recommended,

particularly those in Chapter 8, Back Injuries, it will very soon get right.

There is, however, an injury which occurs sometimes in football players, and even more commonly in boxers, in which fibres of this muscle are damaged very deep down inside the chest beneath the lower border of the ribs It is a most intractable pain, and even more commonly than the former trouble mistaken for other conditions It often occurs in the region of the gall bladder and it is really quite difficult to distinguish the pain from that of gall-bladder pain. Needless to say, the treatment is totally different, because whereas the muscle injury requires exercise the gall-bladder condition must be treated by medical or surgical means

Groin pain. Because of the locality, pain in the groin often causes more alarm than a similar pain elsewhere, yet it is frequently due to a very minor muscle strain that anywhere else would be treated almost without any anxiety at all Just because you have pulled a muscle in this region there is no reason why you should rest it in fact, I know of no excuse for resting it. Recently a young runner sprained his ankle and ran for some miles putting all his weight on the other leg The ankle recovered, but he was left with a severe pain in his left groin. All sorts of people expressed their opinions as to what this might be, and of course they suggested everything but the obvious because he had been thrown off his balance, he had put an added strain on his left groin muscles and they had reacted by straining too He was told to rest for a month, and of course the whole tone of his muscles deteriorated considerably During this time he had heat and electrical treatment on the affected part, and that too made the muscles flabbier than ever He then met somebody who suggested that he should exercise it, but did not warn him that he would get a severe reaction having tried it, he very soon decided it

could not be the right treatment because it made the pain so much worse. That is just how any muscle anywhere in the body would react to such treatment. He should have been told that the muscle would take some time to loosen up and regain its old suppleness, and that he must expect some pain on the way The most important thing for him was not to try to do anything very energetic but first and foremost to recover his balance This would best be done by some gentle standing running with full knees bending, gradually increasing the number of times he did it, and then having recovered his exact balance and putting an equal weight on both legs, he would be justified in going out running He would then very soon be able to get back the tone of the muscles and the pain would go out of them

Haematuria. It is not unusual at the beginning of a season of training for an athlete to pass blood in his water, in fact the urine may become dark red and thick. It has often happened in my experience, particularly amongst cross-country runners and usually on the first training run of the season It is usually of no significance at all, although it seems to cause a great deal of panic. The cause is probably that the kidneys are suddenly called upon to do more work as excretors than they are accustomed to, and temporarily fail to cope with it

The natural tendency is to go rushing off to a doctor to have the whole of one's urogenital system thoroughly investigated but this only has the effect of exaggerating in the patient's mind the seriousness of what has happened Haematuria by itself is of no significance at all. If it were due to kidney or any other disease, then there would be many other signs of trouble. The usual fear is of tuberculosis but if that were present, long before blood appeared in the urine there would have been other signs such as profuse sweating and loss of weight.

If, after a run, your water is stained red, do not rest, but

continue your training routine It is very unlikely to occur again, but if it does – and if it appears worse than the first time – then is the time to go to a doctor and get it thoroughly investigated If this training form of haematuria occurs, drink plenty of water to wash out any debris that may remain empty the bladder, of course, just as soon as you want to – do not retain urine unnecessarily

SPECIAL EXERCISES

These are mainly described under Back, Neck and Chest One of the most important ones is the forward and backward trunk bending Next in importance comes the kneeling exercise (Fig 11) in which you bend the trunk back to touch the head on the floor Another one is to stand with your legs apart and twist your trunk sideways repeatedly, with or without arm action.

STRENGTH TRAINING EXERCISES

The best of these is described in Chapter 2, Tuning up the Muscles This is the sit-up on the table using straps A second one is described on p 66, and is the opposite of the last one Finally there is side placing with the legs The body is supported by a weight, as shown in Figure 36 The legs should be kept quite straight and together, and placed from side to side.

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important to get the athlete on his feet and try to restore his balance. He has probably fallen violently and been in severe pain, and that has caused spasm of probably the whole group of muscles involved It is most important to walk him round until the spasm has worn off, and then get him to trot gently in as balanced a way as he can. This will probably take anything from 30 minutes to two hours

Here are some important *don ts* Don t strap the leg up that can only cause an obstruction to free circulation, no matter how carefully the strapping is applied Perhaps worse, it causes abnormal movement of the muscles when you try to walk him around Equally, don t massage the muscles, for reasons already given. Don t apply any form of heat. Don t let him rest, but keep him moving, and get him free of the unbalanced constriction that has occurred Any pain can be relieved by taking Veganin, but do not try to relieve the pain either by local injection or by rubbing anything in. Injection is seldom justified in the area of the thigh, because a large area of muscle is always involved, if not by the actual tear certainly by the bleeding, and it would be impossible to inject the whole area involved Unless you can be sure of obliterating all pain, injection is useless No one should ever be tempted to inject more than the most microscopic amounts of anaesthetic (a maximum of 1 c.c.), and this would seldom be enough

Next morning he will probably wake up with a very stiff leg and the sooner you can loosen that the better He should get back into his running togs and be made to run at a gentle, balanced pace and he will feel the leg becoming freer and freer By the afternoon he should be able to run quite fast, without a limp In fact the coming on of a limp is an indication of the progress of recovery the patient must not go any faster than he can go without limping The next morning he will be freer of any stiffness by the evening he should be able to run at three-quarters speed On the fourth day he should be able to run at full speed.

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Thigh Injuries

There is probably nowhere in the human body where muscles get torn more commonly than in the thigh. This is probably due to the fact that there are so many different muscles in that area involved in running, and, of course, liable to be damaged in the ball games such as rugger and soccer It would be difficult to say that any one muscle was more commonly injured than another, although it is probable that sprinters as a group, more often tear the hamstrings than the quadriceps The care of these muscles is such a vitally important matter that it is worth while describing in detail exactly what the treatment of them should be

First of all, they are too often wrongly treated, and made considerably worse as a result of that wrong treatment. I have already explained that when a muscle tears you get bleeding and therefore no form of heat or massage should be applied until the risk of further bleeding has been removed, that is after a period of about four days If a muscle gets torn, the routine should be as follows. To minimize the bleeding, cold water should be applied either from a tap or with wet towels as soon as possible. Ice is not recommended because it causes too violent a contraction of the blood vessels which may lead to spasm and later an ischaemia. Cold water applied from a tap for 15 to 20 minutes is always adequate to stop any further bleeding, and the sooner it can be applied the better After that it is

as possible, and reduce any tendency to acidity of the bowel by taking salts It is no good using ointments, because they just make the area dirtier Use evaporant non-oily liquid, or talcum powder, instead Once the infection has started up, it is useless to take part in any of these sports until the condition has completely cleared up Further irritation or friction only tends to make it much worse, and a lay-off of three to four days, during which you keep the area well covered with a dry antiseptic dusting powder, will very often clear it up completely The tendency to develop this condition can be reduced to a minimum by wearing as few clothes as possible, preferably with silk next to the skin, but more important still is to wear the sort of clothes that do not ruck up and add to the friction.

An additional complaint amongst oarsmen and canoeists is soreness of the bones they sit on, *i.e* the ischial tuberosities Some people are better padded than others and people who lack natural padding here should insist on sitting on a padded seat. Dunlopillo is an excellent pad for this sort of thing

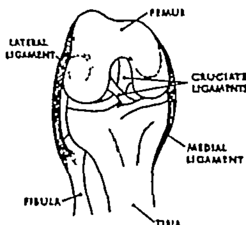
Another common complaint in this part of one's anatomy is profuse sweating in the region of the groin, which becomes chronically sore. It is important to keep the area as clean and dry as possible, and to prevent any undue sweating by wearing light and loose-fitting underpants The tops and bottoms of these should not have elastic in them Never use ointment on these sores, but apply antiseptic talcum powders

I quoted (p 15) the classic example of the sprinter, who was treated in this way for a tear in the hamstrings, one of the severest muscle tears I have seen, and eight days after the injury did his best time ever Many people are afraid to activate these torn muscles too much, because of bruising Bruising does not matter in the least compared with freeing the healthy muscle tissues from any surrounding bruising or fibrous tissue formation. If you keep the limb moving, the damaged muscle fibres entirely separate themselves off from the healthy ones, and no permanent adhesions are allowed to form. Any laziness or resting will cause everything to gum up , and every day it is left it becomes more difficult to free.

In the case mentioned above, the patient s leg was absolutely black with bruising from thigh to heel, for at least three weeks after the injury However, after about the fifth day he was entirely free from any restriction of movement, and the bruise just worked itself out without any inconvenience to him. As I have said before, I have never known exercise to cause a muscle to tear again in the same place and I believe this to be because Nature brings all sorts of defensive mechanisms into action to prevent such a recurrence After about the fourth day, massage and heat may speed up the healing process, but I find most frequently that the course of recovery is best left to Nature, and you are more liable to get a setback, such as swelling of the knee or ankle, if you try to take things faster than that. Things like that are merely Nature s way of warning us that we are taking things too fast

Saddle soreness Seat soreness This is a very common complaint amongst cyclists, oarsmen, horsemen and canoeists Far more frequently than not, it is not due to any direct friction, but to profuse sweating in this region leading to infection of the hair follicles and consequent development of boils etc. The first thing to do is to keep the area as clean

tion for two or three weeks, and that is the time when the damage to the patient's general condition is, or is not, done. If, while he is in hospital, he is encouraged to do quadriceps exercises, so as to minimize the wasting of these muscles then he can make a complete recovery and be as good as ever he was In severe cases, the leg will be found to be locked after the accident, and no amount of pushing or pulling will enable you to straighten it. It can, in fact, only be straightened under an anaesthetic, and then has to be kept still until it has settled down. If the knee locks and you are able to free it yourself, that is a sign that you should be able to get it back to normal without operation, by strengthening it with special exercises



The knee joint consists of three principal ligaments – medial lateral and cruciates When a cartilage gets torn these ligaments are inevitably affected too, but if you can strengthen them up after the accident and at the same time make the quadriceps muscles stronger, then in ninety-nine cases out of a hundred stability is recovered without operation. The tendency in many clubs is to strap the knee up, lose all the tone of the muscles and ligaments, and reduce the stability to nothing that course entails the risk of the knee becoming permanently unstable If, however, the

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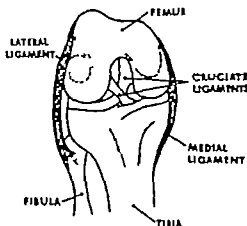
Knee, Ankle and Foot Injuries

There is no doubt that one of the commonest sources of trouble in the world of sport is the knee. We can all recall famous athletes whose careers have been seriously affected by their knees, but the treatment of them, which has been so haphazard in the past, is very simple and straightforward. Unfortunately the knee joint is one of those joints which contain cartilages, and for this reason whenever anything happens to the knee the quacks dub it a torn cartilage, so that the minute an athlete has knee trouble, he fears the worst.

A severely torn cartilage certainly requires an operation, and an athlete would be well advised to have it taken out just as soon as it is severely torn. The expert can tell quite definitely and simply to seek advice from an unqualified person is foolish, for only an expert can be relied upon to make a correct diagnosis Many athletes fight shy of a surgeon on such an occasion because they are afraid of having to have an operation, but no surgeon would operate upon an athlete except in absolute necessity It is only necessary in the case of severe tearing and as there are all degrees of tear far more commonly than not the treatment is an active one that does not require operation.

There is no reason to suppose that, after having the cartilage removed the athlete cannot be as efficient as he was although very often he is not, he could be if he were properly advised. The operation necessitates immobiliza-

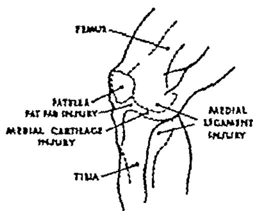
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active routine is adopted from the start, although there may be one or two recurrences of the trouble, it soon becomes as strong as the other knee.

Medial and lateral ligament tears These are the commonest minor injuries of the knee that we get and of the two the medial ligament is the one more commonly affected The pain is severe, and localized to a point over the ligaments, which is either just at the joint level on the inside of the knee or at the same level on the outside. The amount of swelling varies from being localized to the area of injury to extending throughout the knee joint. The area of pain is usually very small, though



Points of tenderness at the inner side of the knee

it can be extensive Don t strap it up don t rest it, but try and get back the movement and increase the circulation through the area as soon as you can by doing rhythmical and balanced exercises. They are the same as those recommended for toning up the knee after a cartilage operation or displacement. If the pain is sufficient to make a rhythmical movement impossible, then an injection of anaesthetic might be justified Again, this only proves

necessary in a very small percentage of cases and it is far better to get back the stability naturally by doing the hard work against the pain oneself than to rely on any such artificial aid

Cruciate ligament injuries These occur as a result of stubbing one s foot into the ground very forcibly, or having the leg forcibly extended It is perhaps one of the most serious injuries you can sustain in this area because the cruciate ligaments will probably not function again. So the aim must be to stabilize the knee by strengthening muscles and tendons to compensate for the weakened ligaments

Synovitis Another very common condition of the knee is that of synovitis or swelling, which may occur anywhere in the front, sides, or back of the knee Cyclists develop a condition of this sort, which they know as Easter Knee, caused by exposure to damp and cold, particularly at the beginning of the season. The knee reacts to the unaccustomed exercise by swelling up and becoming stiff and painful Other causes are continuous kneeling such as the housemaid does, and all forms of wrenching or twisting which may damage the tissues

A very good tip, if circumstances will allow it, is to lie on a beach with the leg entirely enveloped in sand, pour some seawater on it and let the sun draw off the fluid. If you leave the knee encased in this damp sand for half an hour, and then take it out, you will find that the fluid has disappeared with dramatic suddenness The process can be imitated by using sand and salt with an ordinary heat lamp, but that is not usually available to ordinary folk. The drawing-off of the fluid is a manifestation of the same principle as is followed in the use of salt and milk for boxers bruises (p 53)

Synovitis of the knee is a condition which should never be strapped up, for obvious reasons knee strapping is bound to limit the circulation through the knee and that

must be avoided. Nothing is gained by heat or massage, though after vigorous exercise it is a very good idea to elevate the leg, on the end of a sofa for example. The force of gravity will often remove any traces of excess fluid that may have accumulated in the knee Whenever fluid *does* form there, the sooner you can get rid of it the better, as once it goes solid, it is very difficult indeed to remove it. Small quantities however, can be completely harmless, and are best ignored

Chondro-malacia Patellae This high-sounding name is given to a very common condition that arises amongst cross-country runners It is a roughening of the under-surface of the kneecap bone due to the fact that the limb has been put through a limited range of movement and worn rough in a limited area. When the knee moves the kneecap moves too, and can very easily become worn out, so to speak, in a certain area. If this area becomes roughened by excessive use it becomes extremely painful.

It might be thought that rest would put it right, but all that does is to make it worse, so that it becomes a permanent disability The answer is to put the knee through a full range of movement, so that any debris and roughness of the joint is moved into a less sensitive part of the joint space and finally dispersed altogether Runners who develop this condition should therefore practise a daily routine of 20 minutes to half an hour of standing running with full knees bending coupled with a regular-paced jog-trot run each day of five to eight miles The pain usually comes on at about three miles and it is important to try and run through the painful stage, which may last from one to two miles It then eases and each time you do it, after reaching a certain peak, it will gradually die off It is best not to race for two to three weeks after the condition, as it is quite easy to cause it to flare up again by too strenuous a movement in long-distance running

Myositis Ossificans This is an injury that commonly occurs amongst football players as a result of direct trauma The player gets a sudden kick on the thigh, and excessive bleeding occurs inside the bulk of the quadriceps or hamstring muscles It is sometimes possible to feel the blood cyst, and evacuate it with a syringe, but this should only be done by a doctor This is not often necessary, but if the bruise can be felt as a cyst then it is best evacuated at once and pressure applied for two days More often than not such bleeding as has occurred has become diffuse, and it is impossible to take it off After a week or two of the active routine, X-ray may reveal the fact that ossification is occurring in the muscle. This might seem very alarming, but if vigorous exercise is continued then the ossification occurs only in damaged muscle which is entirely separated from any healthy active muscle fibres, and so becomes of minimal nuisance

E. McDonald Bailey sustained this injury very early on in his athletic career, and has ever since carried a large mass of calcified muscle in his left hip joint region. One might suppose that this would be very damaging to his whole balance, and indeed prevent him ever becoming a really great sprinter Many people thought, when he sustained this injury that it was the end of his active career However, it does not seem to have done him much harm, and if ossification is going to occur it will occur no matter what you do to prevent it. Some people form ossification much more readily than others, but if you continue the active routine after such an injury then it is seldom, if ever, that you cannot get back full function in spite of it

If the injury occurs in the quadriceps, it is most important to get a full range of movement in the knee as soon as possible, by persistent full knees bending, stretching the quadriceps muscle Equally, if an injury has occurred in the hamstrings, high kicking with the knee fully stretched is most important.

Periosteal Haematoma It is often difficult to distinguish this injury from the previous one. This is deeper, however because the bruise occurs between the bone and its covering, the periosteum X-ray will usually reveal it, and it is important to have the blood taken off by a doctor as early as possible It may prove difficult, in which case it may have to be left. The active routine again holds, and it is more than ever important to free the surrounding muscles and maintain their tone Some schools of thought advise rest, and immobilization in plaster of paris This might be the kindest way of treating an old lady, but is certainly no way to get an athlete back to full activity No harm whatever can be done by keeping him going and getting him back to full balance and muscle tone as soon as possible

In these two conditions, it was for a long time thought that certain forms of treatment, including heat and movement, were liable to cause an increase in the amount and degree of ossification. It is now agreed that nothing can make any difference to this, and that the degree of ossification depends on the individual.

Fracture of the Patella This is quite a common injury in sport. It can be diagnosed by gentle digital pressure on the kneecap from which it can be felt that the bone is broken and it may be in many fragments I mention it because it is an injury which is commonly treated as a severely sprained knee, but it should never be dealt with except in hospital Recently a description of how to strap this injury appeared in a book, but it should never on any account be treated by a layman.

Shin soreness Shin splints One of the commonest pains amongst sprinters is a pain which develops in the region of the shin bone It is usually along its posterior border on the inside of the leg It is not only painful to any vigorous movement but tender to touch, and it can be a most persistent pain. The best way of dealing with it is to try to

understand what it is Along the shaft of the shin bone is the only place in the body where muscle arises near the surface Actually the bone is covered with a bone-covering, or periosteum, and the muscle arises from this In training and building up fitness, the tone of this muscle has to be gradually improved, and often it is very sensitive to an attempt to tone it up more quickly than it wants This results in the muscle fibres getting too powerful before they have become properly supple, so that the muscle tears off from the periosteum, or tears the periosteum off the bone

To cure it, you have to take things more steadily, and try to build up the suppleness of the muscle more gradually This is done by running more on the flat of the foot, which puts less of a strain on that muscle, and doing more regular, rhythmical, relaxed exercise You need to do a great deal of steady-paced running before you do any all out sprinting Shin soreness occurs most commonly in sprinters for the simple reason that they are the people who require the most powerful and sudden contraction of these muscles But runners of all distances can get it, as many will know to their cost The only answer is to build up the tone of the muscle more gradually, and the pain will gradually die away It is another of Nature s ways of warning us that we are taking things too quickly This is incidentally the only complaint for which I would recommend rubbing anything into the skin I find that rubbing in olive oil can speed things up and bring considerable relief

The area may become swollen and inflamed, and only if it is inflamed is it necessary to rest it for a period but then it will be all the more difficult to cure Never strap it up or massage it. Equally, any form of heat, for reasons given previously in the book, are contra-indicated It can only be healed by adequate, correct and steady training and there is no short cut to that

Stress fractures of the fibula. Although I describe stress fractures of the foot in the next section, there is a common type of stress fracture that occurs at the lower end of the smaller long bone of the leg, the fibula. It most commonly occurs in middle-distance runners, and particularly in those who do their training on the road. It has some relationship with the camber of the road, and the fact that they run in an unbalanced fashion necessarily putting more weight on one leg than the other, as a result of the camber The bone suddenly cracks across, although the actual pain of it may develop only after two or three days As with all stress fractures X-ray often does not show it for several days but the pain will increase and then the X-ray will show it quite clearly as a crack across the bone

The treatment is similar to that for the other types of stress fracture. The athlete should continue gentle training avoiding uneven surfaces and roads and not racing for three to four weeks He should continue a normal steady training routine, and the limb should not be strapped up in any way The movement and increased circulation through the area causes the bone to knit up very quickly, and it soon becomes the strongest part of one s anatomy Naturally, as it is knitting and the surrounding ligaments and muscles are recovering their tone, you may get twinges of pain, but these are insignificant and there is little or no risk of causing any increase of damage unless you do something stupid like racing on an uneven road surface or jar the leg violently by a fall

Torn Muscles of Calf (*Plantaris etc*) Sometimes muscles of the calf tear so suddenly in the middle of a race that it feels as if someone has shot you in the calf It was always thought that such a tear only involved the long thin plantaris muscle but this is not borne out by modern evidence, and it may be any muscle that does it. The treatment is the same as for any pulled muscle elsewhere in the body and

the thing of primary importance is to correct balance as soon as possible. It usually occurs as a result of doing too much racing in spikes before you have done the necessary training

SPECIAL EXERCISES

Any exercise which puts the knee through a full range of balanced movement is good and the one I recommend is standing running, alternated with full knees bending, hands on your knees, knees well apart, eyes to the front and level, and keeping your back straight (Fig 40)

Another one is to stand a yard from a wall and try to force your foot through the wall with your leg straight. Repeat (Fig 41)

Another one in this same group is to stand with your back to a bed or table, the bottom of which is about two feet from the ground Try lifting the table or bed, which should be unliftable, with the heel of the affected leg Again, it is most important to do the exercise in as balanced a way as possible, keeping the trunk straight and looking to the front (Fig 42)

STRENGTH TRAINING EXERCISES

There are numerous exercises which can help the knees these are described under Back and Abdomen (Chapters 8 and 12)

ANKLES AND FEET

The commonest injury to this part of an athlete s anatomy is strain of the Achilles Tendon. This is the tendon that arises in the muscles of the calf, and is inserted into the heel bone It very often becomes swollen and inflamed as a result of strain and this strain is often closely associated with bruising of the heel.

It is sometimes quite impossible to distinguish the two conditions because there is a very poor circulation in the heel, and if bruising occurs it tends to track into the region

of the Achilles tendon, which may already be inflamed itself as a result of the jarring that has caused the bruising of the heel A bruise anywhere in the body takes five or six weeks to work out, whatever one may do for it, but it takes ten to twelve weeks in the heel and ankle simply because of the thick, fibrous nature of the subcutaneous tissues in this region

Prevention is always better than cure, and my advice to any athlete doing a lot of exercise on his feet is always to pay particular attention to the sort of shoes he wears To have spongy rubber soles for training is not enough. I advise an additional small rubber heel-pad inside the shoes, otherwise, with the foot continuously banging down on the ground, bruising is liable to occur Footballers, rugger players, and other ball-games players run the same risk, and they, too, should always wear spongy rubber pads inside their shoes. If, however, the condition of bruising has already occurred, it will always be found to be very persistent. The only treatment is to wear the spongy pads not only in one's sports shoes, but also in one's ordinary walking shoes or boots. Because only one foot is affected is no reason to wear only one pad that will only upset your balance and may well lead to strain in the other foot. The principle of avoiding strapping holds more for this area than for any other, simply because of the poor circulation. It is bad enough without any added obstruction to a free flow of blood.

Achilles tendon fatigue or strain, if it occurs independently of bruising of the heel, is characterized by a small localized area of pain in the tendon sheath. Many of the so-called experts think that it is a good thing to rest it, but if you do that, very soon after starting training again the condition will recur No as in all other cases of soft-tissue injuries nothing is to be gained by immobilization or strapping Nature can get over the difficulty much better than any other method. Try to understand what has caused

it, and then continue training, avoiding such things as too much work on the toes if you are a sprinter, or too much banging down on the feet if you are a ball-game player or middle-distance runner Sponge-rubber heel-pads should be worn at all times

It is important to appreciate that a far greater strain is put on the Achilles tendon when one is running on one's toes than when one is running on the flat foot Although it might appear that the tendon is more stretched when the foot is flat, in actual fact the strain on the tendon all comes in the action of keeping the heel off the ground So if Achilles tendon fatigue occurs all training should be done on the flat feet, and sprinters should avoid getting into their spikes except when absolutely necessary, for there again the foot is immediately raised on to the toes and an added strain is put on the tendon. To wear a rubber pad inside the heels of your spikes is no excuse for doing a lot of training in them when the Achilles tendon is giving trouble

There is another reason for never putting sponge-rubber pads inside spikes spikes need to be very tight-fitting, and this spongy rubber tends to make the heel move more than it would without it.

I do not think heat, massage, or any form of electrical treatment will relieve this condition. If it becomes particularly painful after exercise, any fluid in the tendon sheath or in the region of the ankle joint can quite easily be dispersed by lying on a sofa or bed, with the leg elevated. Even half an hour will cause the fluid to disperse quite considerably A temporary relief from pain if there is an important match on hand, can be brought about by injections of minute quantities of anaesthetic in oil This is an expert job and should never be carried out by anybody but a qualified doctor Of the numerous cases of Achilles tendon fatigue that I have dealt with, I have not injected more than about one per cent, and yet they always play or run, in spite of the condition, almost immediately

While on this subject, it is important to clarify an argument often used by people who do not know the scientific reasons for using these injections They say that Nature warns one of trouble by causing pain, and that it must therefore be wrong to obliterate pain, even for a few hours because further damage is liable to be done while the part concerned is anaesthetized This is not borne out by practical experience. In fact, by enabling the patient to exercise the part concerned much good is done, and bearing in mind the principles of active treatment this is not surprising Nature brings many protective mechanisms into play when a part is injured, and these are not in any way affected by the injection of the anaesthetic. That simply deadens pain and has little or no other reaction on the tissues Thus while the pain is deadened the increase in the circulation through the affected area does nothing but good The various antibodies that protect the damaged parts are not in any way affected by the drug

I believe these injections can be wrongly used, and frequently are indeed they are widely abused But for a player in a first-class match, or in fact any match, to be refused such an injection on the grounds that it can do him no good is absurd There is no connection here with the undesirable practice of doping players I dealt with this subject of dope in Chapter 5 here I need only point out that injecting anaesthetic has no connection with doping at all. It is used purely as a pain-killer, to enable the patient to continue to exercise the damaged parts of his anatomy In a wide experience I have never known it to do any harm.

Blisters Blisters are one of the most tiresome foot ailments that athletes suffer from, but they are quite inexcusable if the subject of training is approached with intelligence. Blisters do not occur except where there is friction, so all friction should be obliterated Wearing socks in one's running shoes always tends to cause trouble, and so will

badly fitting shoes. Many people have the habit of smothering their feet in petroleum jelly or some such oil This is dangerous because, although one may wear a certain pair of shoes and get away with it for a time, the oil soon causes the shoes to lose their shape and then they become ill-fitting and blisters may easily occur Even first-class athletes err in this respect, and I have known Olympic athletes, particularly long-distance runners, to suffer from blisters

The friction can be lessened by using talcum powder on the feet, and keeping them as dry as possible. It is quite easy to over-harden the feet, and cause worse blisters than ever, but as a routine for the average foot I recommend soaking the feet for ten minutes three times a day for two days in methylated spirits That will just harden them enough to prevent blisters in any middle-distance race If you have particularly soft and sweaty feet, then try soaking them for a bit longer, perhaps for four days It is the sort of thing that one must find the answer to oneself, or it may cause endless trouble and finally lead to retirement from sport.

Some people have a habit of soaking socks in soap and letting them dry on the feet. This is quite practical for one particular race, but again leads to trouble because of the loss of shape of the shoes If you bear that risk in mind, and the danger of over-hardening the sole of the foot, then you will probably escape the trouble altogether However, it is one of those things that must be dealt with as soon as the trouble arises, or it can cause endless inconvenience.

The quickest way of getting rid of blisters is as follows Open them and cut off all the overlying dead skin. Don t use an ointment on them, but simply a dry dressing They will smart and be quite painful for a few minutes, but will very soon settle down. Obviously one should not train on them or race for a day or two, although with this treat-

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the bone has cracked There are varying degrees of fracture, and there may be no separation of the broken bone at all On the other hand, there may be wide separation More than one bone may be affected The treatment, however, is the same in all cases I do not recommend any form of immobilization, and certainly no athlete should be put into plaster of paris for such a fracture. The illustration



Stress fracture of metatarsal bone with pad in position *above* recent fracture with separation *below* old fracture with callous formation and firm union



shows how one can put a small triangular pad underneath the affected bone so as to re-form the arch and thus support it. The pad is kept on by two turns of Elastoplast, and then although the patient is not recommended to race or run, he can continue to walk and do any moderate training on the flats of his feet.

Actually, if you increase the circulation through the foot you speed up the process of joining up of the bone Continuous X-ray checks should be made to ensure that bone union is occurring I reproduce a picture of a recent

ment it has to be a very severe blister to keep one off for longer than three days It is essential to keep the opened blister clean, and if there is risk of dirt getting into it again don t use ointment on it but an evaporant which dries it, and a dry dressing impregnated with antiseptic powder

Toe nails Another very common condition occurring mainly in runners is bruising and tearing of the toe nails Much more attention should be given to keeping the nails always as short as possible. What often happens is that as the nail grows longer, in the act of running the shoe keeps on pulling it upwards until finally the underlying tissue is so irritated that bruising occurs As in the case of a bruise anywhere else in the body, it takes some weeks to work out, and can in that time cause endless inconvenience

Prevention is better than cure, but if this bruising has occurred and is at all severe it is best to have the nail taken off altogether rather than bear with it for several weeks, which in any case may seriously curtail training This condition is another example of something that never occurs in wise training There is no excuse for allowing it to happen, and if one is a member of a team it shows a complete lack of appreciation of one s duty to that team Toe caps, bandaging or padding may give temporary relief, but they are not to be recommended because they prevent the shoe from fitting properly and do not remove the cause of the trouble

Stress fractures A much more common injury than is generally realized is a stress fracture of the small bones of the foot It is known as a march fracture because it occurs in soldiers when they are marching due to forcibly striking the foot on the ground. It usually occurs in the shaft of the second or third metatarsal bone The bone snaps across very often without any warning pain, and for no apparent reason the pain may even not be felt for several days after

the bone has cracked There are varying degrees of fracture, and there may be no separation of the broken bone at all On the other hand, there may be wide separation More than one bone may be affected The treatment, however, is the *same in all cases I do not recommend any form of immobilization*, and certainly no athlete should be put into plaster of paris for such a fracture The illustration



Stress fracture of metatarsal bone with pad in position *above* recent fracture with separation *below* old fracture with callous formation and firm union



shows how one can put a small triangular pad underneath the affected bone so as to re-form the arch and thus support it. The pad is kept on by two turns of Elastoplast, and then although the patient is not recommended to race or run, he can continue to walk and do any moderate training on the flats of his feet

Actually if you increase the circulation through the foot you speed up the process of joining up of the bone Continuous X-ray checks should be made to ensure that bone union is occurring I reproduce a picture of a recent

fracture of this kind, and then one showing the callous formation round the fracture site a fortnight later It is usually about a month before the patient can get back to full training, and then he need have no fear that the bone will snap again because it is probably one of the strongest bones in his body People with protuberant second metatarsals often sustain this injury, though that is not the whole explanation and it may be due to brittleness or continued strain This condition is often mistaken for an inflammation of the tendons and their sheaths in the upper part, or dorsum, of the foot. It shows the necessity for expert supervision of such cases, for if it were treated wrongly the result would be disastrous to the athlete If it were treated as a teno-synovitis, and exercised by vigorous ankling movements, then non-union of the fracture might occur and the whole structure of the foot be permanently affected.

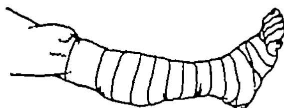
Plantar fascitis This is a nasty, pulling, aching pain in the sole of the foot, usually along the inner border of it, again due to strain it usually occurs at the beginning of the season and is due to running too much on one s toes, though it may well be caused by any running, even if done on the flat of the foot It is due to the muscles having become atonic and fibrous the exercise causes an increase in circulation through the area, and the process of forcing blood into these muscles causes them to become tender and painful. There is no way of relieving this condition except by continued training, doing so preferably on the flat feet on well padded, spongy soles If you rest it, as with so many of these complaints, you will only have to work through the painful stages when you get back to training and any delay causes it to be that much worse when you come to it. The habit of wearing a pad of spongy rubber underneath the arch of the foot to protect the painful area is not recommended, because it gives support to the muscles concerned and relieves them of the need to do work which

they should do to get toned up By all means wear a pad under the heel, and a full-length sponge-rubber sole, but don t put any pad under the arch

Medial and lateral ligament injuries On either side of the ankle joint there are strong ligaments which get torn and strained whenever the ankle is turned over forcibly either outwards or inwards To strap the ankle up and immobilize it is contra-indicated just as in any other ligament injury, though if the injury is very severe it is necessary to have hospital treatment and to abide entirely by the treatment recommended there. With a moderate degree of injury of these ligaments the sooner you can get the ankle moving normally the better Increasing circulation will greatly disperse bruising, and if there is any accumulation of fluid, half an hour s elevation of the limb, followed by exercise of a gradually increasing nature, will soon free the trouble To immobilize it in plaster, or rest it, will make the final loosening up all the more difficult. If you can get back on it quickly after the injury then you will make a much speedier recovery

Very often people are left with a vestigial pain and limitation of movement some weeks or even months after the injury, and this can only be corrected by adequate stretching exercises to tear down the adhesions that are causing the trouble

It is these ligaments that most commonly get damaged in a sprained ankle The main thing is to prevent swelling, which invariably occurs if there is any degree of injury This can be done by strapping the ankle evenly from



the base of the toes to just below the knee, as illustrated. The strapping is not stretched on to the limb but just laid on without any attempt to put it on tightly Once the swelling has occurred, of course, it is useless to put the strapping on, but if you can get it on before, then apply it for 48 hours in the way suggested Then gently exercise the ankle until you feel it loosen up If the Elastoplast becomes very tight and the ankle starts to swell, elevate the limb for half an hour and try again. It will very soon be found that the strapping is quite comfortable and is controlling any tendency to swell If the accident occurs in the middle of an important match, this is an occasion when an injection of anaesthetic, the application of strapping, and a minute or two of gentle freeing movement will enable the player to get back on to the field, though if he tries to play very vigorously he must not be surprised that swelling occurs and that he has to rest rather longer than he otherwise would have done after the game.

The strapping should come off at any rate two days later to enable one to exercise the joint as much as possible. Recurrence of swelling is very rare and in any case can best be dealt with by vigorously massaging the limb in elevation. As soon as the fluid has been dispersed, gentle exercise should be applied so that there is no prolonged stiffening

Capsulitis Swelling of the ankle joint can be very painful, and the degree of pain is associated with the degree of stretching of the capsule of the joint. All joints have such a capsule, which forms a sleeve across the bones of the joint, inside which is the lubricating fluid of the joint. If the joint gets damaged and inflammation occurs so that the fluid content of the joint is increased, the capsule becomes stretched and this is what causes the pain. Massage with elevation disperses the fluid, and this is speeded up by co-operation from the patient, who should try to move the joint as much as

possible. Some people inject such injuries with anaesthetic, but it is important not to inject deep to the capsule of the joint for even the most microscopical amount of anaesthetic fluid will cause any amount of increase in the fluid in the joint space, and then later cause more pain than ever because of the stretching of the capsule These anaesthetics, even in oil, do not last very long, and the pain when they wear off can be much more severe than when the injection was given. The art of being able to anaesthetize the capsule without penetrating it is one which very few people have developed, and I do not recommend such treatment except by doctors who have specialized in it

Broken toes Sometimes players kick objects so hard that they break their toes The ground may be very hard, and they may stub their foot into it and break a toe This is not as serious an injury as it sounds and to immobilize the affected toe in a collodion dressing usually protects it sufficiently If the dressing is applied sensibly the patient may well be able to continue to play without missing any games

Numbness of the feet The only sport in which this condition is commonly found is long-distance cycling It can only be caused by toe clips being too tight, or by the feet being too congested in the shoes It can always be cured by paying due attention to these matters and by realizing that the numbness is due to obstructed circulation.

Burning feet are simply overheated feet Every effort should be made to cool them down by wearing thinner socks, and very often it helps to wear non-rubber shoes Sufferers from this complaint should smother their feet in talcum powder They will not gain any permanent relief by using ointments

Athlete's Foot (*also known as Tinea, or Foot Rot*) Every athlete, at some time or other, gets this complaint, usually

in the summer months It takes the form of itching between the toes, with patches of sodden, dead, white skin. It often becomes secondarily infected and spreads all over the foot, and scratching may easily spread it to the hands Here, it shows itself in the form of little pimples, like blisters, which itch continuously It is initially caused by a fungus which cannot live on the dirtiest of stone floors, or even on dirty duckboards It does, however, thrive on towelling and matting So never stand about on either of these things, nor on any form of such material, clean or dirty In fact, no changing-room should ever have towelling or matting on the ground

The following routine clears up the trouble. Last thing at night, wash your feet thoroughly and dry between the toes Next, smother both feet, particularly between the toes, with a fungicide ointment. (The best is Whitfield's which can be got from any chemist.) Now put on a pair of bedsocks It does not matter how thick with ointment these get. Finally wash your hands thoroughly, paying particular attention to scrubbing the nails as the fungus gets under them. Next morning, again wash your feet thoroughly, dry between the toes, and re-apply as much ointment as you like Now don a pair of dry socks. Scrub your hands again thoroughly Repeat this routine morning and evening for about four days or until you think the condition has entirely cleared up wearing the same pair of day socks and night socks for at least four days It is important to remember that the night socks are a different pair from the day ones If your hands are particularly badly affected you may need to cover them with ointment and wear gloves at night. You notice I advise carrying out this routine on *both* feet. This condition never affects one foot without the other, though one may be worse than the other

Any fungicide ointment may do the trick. It is the routine that counts If you carry it out scrupulously there is no need to suffer from athlete's foot.

Manipulation of the ankle It is very important to get complete relaxation before attempting this The patient should lie flat on his back with his heels over the end of the plinth, but the leg must be resting on a soft cushion or rug First, grip the foot with both hands, as shown in Fig 43, and force the toes away from the ankle, then force them firmly up again still gripping the foot with both hands, evert it and then invert it. Sometimes gross adhesions are found, and you should not be satisfied with the manipulation until there is a full range of free movement

FOOT AND ANKLE EXERCISES

There are two principal groups of these First, sit with your knees crossed, force the upper foot away from you, towards you, away from you, towards you, quite straight and frequently Next, imagine a clock face twelve inches away from your foot and take the foot around the clockface, always bringing the toes as near to your head as possible at 12 o clock. Do the same movement anti-clockwise and repeat as many times as possible The other group consists of looking straight ahead and walking first on the outside of your feet, then on the inside, then up on your points, then with the toes splayed up and outwards then with the toes clawed under All these positions are shown in Figure 44

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THE COMMONER SPORTS AND THEIR INJURIES

ATHLETICS, FIELD TRACK AND CROSS-COUNTRY — WALKING — CLIMBING — MOUNTAINEERING — DANCING

Achilles tendon fatigue
Blistered feet
Broken fibula
Bruised toenails
Capsulitis
Chondro-malacia patellae
Cramp
Elbow strain
Grazes
Groin pain
Haematuria
Lumbo-sacral strain
Lung pain
Plantar fasciitis
Sacro-iliac strain
Sciatica
Shin soreness
Shoulder injuries
Sprained ankles
Stitch
Stress fracture of metatarsals
Torn muscles
Wrist injuries

BOXING — GYMNASTICS — WRESTLING — WEIGHT-LIFTING

Bitten tongue
Broken nose
Bruises
Cauliflower ear
Concussion
Dislocated jaw
Ear injuries
Eye injuries
Finger injuries
General cuts
Joint sprains
Knuckle injuries
Muscle injuries
Rib injuries

CRICKET — BOWLS — CROQUET — SKITTLES

Back injuries
Blisters
Cracked lips
Groin strain
Hand injuries
Shoulder strain

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Grazes
Numb feet
Saddle soreness
Shoulder injuries

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Periosteal haematoma
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Stenosing vaginitis
Sugar lack
Teno-synovitis
Twisted back
Ulnar neuritis
Wrist injuries

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Catarrh
Chills
Cramp
Ear injuries
Eye complaints
Muscle injuries
Spitting blood
Temperature regulation complaints
Twisted back